

ABSTRACT

Jeffrey E. Murphy, A COMPARATIVE ANALYSIS OF THE ACADEMIC ACHIEVEMENT OF BAND AND NON-BAND PARTICIPANTS IN CRAVEN COUNTY, NORTH CAROLINA (Under the direction of Dr. Kermit Buckner). Department of Educational Leadership, June 2013.

This study was intended to compare the academic achievement of students who participated in high school band classes with non-band participants. A problem of practice study was designed to provide data for principals who were creating transitional or remedial courses to benefit core courses. The creation of these courses presented potential scheduling problems that could be detrimental to music programs. Over 3,900 students were observed and a comparative analysis was performed using the following educational variables: (a) grade point average, (b) English 1 End-of-Course test proficiency, (c) Algebra 1 End-of-Course test proficiency, (d) Biology End-of Course test proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rates. Data was observed for all traditional high school students during the 2011-2012 school year.

The study indicated that students who participated in at least one band class during the observed year experienced higher academic achievement than non-participants. The academic achievement of band participants was significantly higher than non-participants in six out of seven of the observed variables.

A COMPARATIVE ANALYSIS OF THE ACADEMIC ACHIEVEMENT OF BAND AND
NON-BAND PARTICIPANTS IN CRAVEN COUNTY, NORTH CAROLINA

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CHAPTER 1: INTRODUCTION OF THE STUDY

After years of varied approaches, policy makers and others are now poised to provide educators with solid standards in literacy and mathematics (Phillips & Wong, 2010). The advent of the Common Core Standards may have educators in forty-eight states headed in a productive direction. The Common Core Standards combined with the federal Race to the Top Fund and investments in state systems of assessment are providing goals that may be useful in the current century (Phillips & Wong, 2010).

The national transformation that includes the transition to the Common Core Standards is occurring when most schools and districts are experiencing financial crisis; however, crisis is an opportune time for educational policymakers to look for fresh approaches to educational frameworks, policies, and strategies (Leenman, 2010). The introduction of the Common Core Standards removes the speculation of what students need to know to be college ready in regard to math and literacy; however, the standards do not convey what the states should do in practice (Phillips & Wong, 2010).

Scarce resources and budget deficits have posed significant challenges for school administrators and policy makers. Budget deficits are forcing many schools and districts to cancel promising programs or components of programs in order to provide sufficient funds for new programs that inevitably accompany new standards (Fitzpatrick, Sanders, & Worthen, 2012). During times of financial crisis, public schools must make challenging decisions that can result in the eradication of programs like athletics and extracurricular programs (Vitucci, 2010).

Educational leaders need to reevaluate what is important in addition to making research based decisions about what is successful or effective. This reevaluation should lead policy makers to discover what should be included in ideal educational programs that prepare students

for college and life in the 21st century (Leenman, 2010). Policy makers need reliable, research based information to make good decisions about which programs to eliminate (Fitzpatrick et al., 2012).

Statement of the Problem

Educational leaders and policy makers developed the ABCs of Public Education which is the accountability model North Carolina school systems have used since the mid-1990s. Many states have emulated this innovative approach to school accountability, and North Carolina is leading the way once again with the Accountability and Curriculum Reform Effort (ACRE). The new standards that have replaced the North Carolina Standard Course of Study are referred to as the Essential Standards. These Essential Standards have been developed for all courses and have been combined with the Common Core Standards for literacy and math. North Carolina schools are in the process of implementing these standards ("Common core state," 2010).

As North Carolina once again defines the criteria by which schools are measured, high academic performance will be a statewide expectation. When the state implemented the ABCs program, school administrators looked for new programs and reevaluated current programs with academic improvement as the goal (Overton, 2001). In an educational environment that includes impending budget reductions, schools have to make decisions to ensure a quality academic experience for each student (Watkins, 2004).

According to Whitley (1995) and Overton (2001), students who participated in athletics experienced higher academic achievement than non-participants. In a Tennessee study of rural high school students, Watkins (2004) found that male and female students who did not participate in any extracurricular activities had significantly lower grade point averages. Overton (2001) recommended that the academic performance of students who participate in another

extracurricular activity should be researched. He specifically suggested that a study comparing the academic performance of band and non-band participants would be a valuable addition to the current body of research.

There is a preponderance of research on the importance of the arts in regard to student development; however, there is limited research in North Carolina that examines the impact of participation in band classes in regard to academic performance. According to Overton (2001), a study that examined the academic impact of participating in a school band program would be beneficial because it could reveal the benefits of participation in a specific extracurricular activity other than athletics. He suggested that participation in band could prove to be an important catalyst for change in one's academic performance.

As administrators evaluate current programs with the new standards in mind, additional research is needed to justify current programs. The impact of participation in music courses on academic achievement is one area that will most likely be considered. There is available research that suggests that participation in music instruction can have a positive impact on academics. In a study of fifth grade students, Dryden (1992) concluded that band participants scored statistically higher on reading vocabulary and reading total achievement. According to Leenman (2010), participation in music programs is an important factor when attempting to raise test score.

There is a preponderance of research that extols the benefits of athletics, but the benefits of participation in the arts, and specifically band, is more limited. In North Carolina, the Craven County Schools Superintendent, Dr. Lane Mills, was concerned that due to accountability mandates and external pressures, the importance of instruction in the arts might be overlooked in the future. He was concerned that principals would minimize arts instruction in favor of transitional courses for core subjects. It was his intention to address this problem of practice by

commissioning a comparative analysis of educational performance of Craven County band participants and non-participants. He hoped that the data from this analysis would better prepare Craven County high school principals to make decisions about band participation (L. B. Mills, personal communication, July 10, 2012).

Superintendent Mills asked Jeffrey E. Murphy, the Havelock High School principal, to complete a study that focused specifically on data from the three Craven County traditional high schools including Havelock High School, New Bern High School and West Craven High School. The study focused on data available for students enrolled in one of the three high schools during the 2011-2012 school year and compared the academic performance of band and non-band participants. The data from 2011-2012 included information for each student enrolled in grades 9-12.

Specifically, Dr. Mills commissioned a study that compared the following academic elements: (a) grade point average, (b) English 1 End-of-Course test proficiency, (c) Algebra 1 End-of-Course test proficiency, (d) Biology End-of Course test proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rates (L. B. Mills, personal communication, July 10, 2012).

There was a need for a study in the Craven County high schools that answered the following question: Do students in Craven County who participate in the high school band programs experience a higher level of academic performance than students who do not participate in band? It was the intention to address the perceived problem of practice of undervaluing high school music instruction in favor of transitional courses for tested subjects during times of curricular change and financial crisis.

Band programs were chosen as the focus of the study because they represent the largest number of students who participate in music instruction in Craven County. This inquiry was designed to specifically provide data that compared the academic achievement of band and non-band participants. These data were intended to provide principals with information needed to make research based decisions about which courses would most benefit student achievement as the new standards were implemented.

Since this inquiry was designed specifically for Craven County, it was decided to use nonparametric statistical analyses. Nonparametric statistical analyses are used to investigate research questions in which the dependent variable is ranked categorically rather than quantified numerically. The data from this study did not require the same assumptions as traditional parametric research. Scores were converted to continuous ranks and then evaluated to determine if there were significant differences between the groups. In nonparametric tests, the actual distribution of scores does not matter (Pallant, 2010). This flexibility provided by nonparametric research was instrumental in addressing the specific problem of practice in Craven County.

Problem of Practice Research

Problem of practice research similar to the study in Craven County is not new in the field of education. Likewise, problem of practice research is not a new concept in regard to candidates for the Doctorate of Education degree. There is ongoing debate about the purpose of the education doctorate (Zambo, 2011). In the 1920s, Harvard University devised the Doctorate of Education (EdD) to allow educational practitioners to have a terminal practice degree much like a Doctorate of Medicine (MD) for a medical doctor, a Doctorate of Dental Surgery (DDS) for a dentist or a Doctorate of Jurisprudence (JD) for a lawyer. The intention was for educators to use existing knowledge to solve educational problems in regard to the practice of their profession

(Wergin, 2011). In reality, the EdD may lack clarity in regard to goals and purposes (Perry, 2011). Conversely, the Doctorate of Philosophy (PhD) is designed to develop scholars who wish to be experts and caretakers in their chosen discipline. Recipients of the PhD often spend their careers researching, expanding, protecting and monitoring the knowledge base of their discipline (Wergin, 2011).

Since the 1920s, perception of the EdD has changed. In 2006, Shulman, Golde, Bueschel, and Gorabedian surmised that there was a perception that the education doctorate has become a second-rate degree. They claimed that the education doctorate was different from most PhD degrees and was designed to prepare educators for scholarly pursuits and for high level educational practice. Schulman et al. (2006) surmised that the purpose of many education doctorate programs was confusing and that often neither level of preparation was adequately accomplished. They further concluded that the EdD is regarded in many academic circles as a lesser degree when compared to the PhD.

There is a perception that the education doctorate at many universities is designed to be a credential for the advancement for of educators and those recipients are practitioners who will not be involved in active research. There has often been a perception that the research training that is tantamount to the PhD is minimized in many EdD degree programs. There is a movement to distinguish the education doctorate from the PhD. A new focus for the education doctorate utilizes experienced educators in doctoral programs who are current practitioners in various educational leadership positions to identify problems in education and through the dissertation process design solutions for the problems (Zambo, 2011). According to Phase II of the Carnegie Project on the EdD, schools of education must improve and define outcomes and expectations for doctoral candidates. Professional practitioners should choose the EdD. Likewise, researchers

and professors at institutions of higher learning should choose the PhD. Programs need to be differentiated for doctoral candidates who wish to be scholarly practitioners and doctoral candidates who wish to be scholars (Perry, 2011).

Problem of practice research in an EdD program can be accomplished if these elements are considered. Existing knowledge must be used to resolve problematic educational issues. Inquiries into practice, inspired by critique and reflection, should lead to practical research that questions current practice through dialogue, action and reflection. Understanding and knowledge should be applied to problems in education to open and liberate avenues for social change (Wergin, 2011).

If all of the elements are accomplished, problem of practice research in the EdD program will allow current practitioners in educational leadership to identify problems in education and design solutions for the problems through the dissertation process. Students in education doctorate programs who perform problem of practice research may achieve the goal of influencing effective change to the benefit of education as a whole (Zambo, 2011).

Significance of the Study

There have been many changes in North Carolina since the Whitley study in 1995 and the Overton study in 2001. In more recent times, the development of new curricula combined with financial crisis has subjected music programs (and other extracurricular activities) to the threat of elimination. This dilemma was the result of reduced funding, the reduction or reassignment of teaching positions, and the development of transitional courses that benefit tested subjects. These transitional or remedial courses have conflicted with band classes and led to reduced enrollment (Leenman, 2010).

Whitley (1995) and Overton (2001) studied the value of participation in athletics in regard to academic achievement. A similar study was needed to compare the academic performance of students who participate in high school band classes with non-band participants. The significance of this study was to provide Craven County administrators with data about the academic impact of participation in a high school band class. This data should be considered as administrators and others evaluate programs and as they attempt to protect the academic welfare of each student during the current financial crisis and as North Carolina implements the Common Core and Essential Standards (Watkins, 2004).

The purpose of this study was to determine if Craven County high school students who participated in a high school band program were more successful academically than non-participants. The methodology for this study was similar to the methods from the Overton (2001) study. Craven County high school principals provided data from the 2010-2011 school year. An analysis of the academic performance of band participants compared to non-band participants is provided according to the following criteria: (a) grade point average (b) English 1 End-of-Course test proficiency (c) Algebra 1 End-of-Course test proficiency (d) Biology End-of Course test proficiency (e) period attendance (f) number of days of out-of-school suspension, and (g) dropout rates.

It should be noted that the data provided for the 2011-2012 year included historical testing data for every current band participant and non-band participant. The data from a senior student included scores from every End-of-Course test that the senior took during high school. Junior students included three years of high school testing data, sophomores included two years of testing data and freshman, one year. Grade point average data and out-of-school suspension

data were also cumulative as well. Only 2011-2012 data for period attendance and dropout rates were included.

There has been more than one comprehensive study that specifically examines the effect of participation in athletics in North Carolina. This exposition provides additional information to the body of research about extracurricular activities by specifically comparing the academic performance of band participants with non-band participants.

Hypothesis of the Study

This examination was a comparative analysis of the difference in overall academic performance between band and non-band participants during the 2011-2012 school year. The null hypothesis for this study was as follows: There is no significant difference in the overall educational performance of band and non-band participants.

A null sub hypothesis was established for each variable that was examined including the following:

1. There is no significant difference in the grade point averages of band and non-band participants.
2. There is no significant difference in the English 1 End-of Course proficiency of band and non-band participants.
3. There is no significant difference in the Algebra I End-of Course test proficiency of band and non-band participants.
4. There is no significant difference in the Biology End-of Course test proficiency of band and non-band participants.
5. There is no significant difference in the period attendance of band and non-band participants.

6. There is no significant difference in the number of days of out-of-school suspension assigned to band participants and to non-band participants.
7. There is no significant difference in the dropout rates of band and non-band participants.

The acceptance or rejection of the overall null hypothesis was based on the comparison of the academic achievement of band and non-band participants.

The methodological structure of this study was a replication of the Overton (2001) study that compared athletes and non-athletes; however, this study compared the academic performance of band and non-band participants. This study utilized the North Carolina Window of Information for Student Education (NCWISE) program that replaced the Student Information Management System (SIMS), the student management system that North Carolina used in 2001. High school principals from the Craven County school district were asked to provide data from the NCWISE program about band and non-band participants who attended their schools during the 2011-2012 school year.

The Overton (2001) study investigated the academic performance of athletes and non-athletes and focused on the following academic criteria: (a) grade point average, (b) English 1 End-of-Course test, (c) Algebra 1 End-of-Course test, (d) attendance rates, (e) discipline referrals (f) dropout rates, and (g) graduation rates. This study investigated criteria that differed because of the differences in the student information management systems of the time and because of a desire to look at additional data relevant to the observed school year.

English 1 proficiency, Algebra 1 proficiency and Biology proficiency were data points for the No Child Left Behind Adequate Yearly Progress (NCLB AYP) during 2011-2012, so these data were included in this inquiry. Performance data from the Craven County high schools

were utilized to compare band participants with non-band participants focusing on the following criteria: (a) grade point average, (b) English 1 End-of-Course test proficiency, (c) Algebra 1 End-of-Course test proficiency, (d) Biology End-of Course test proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rates.

Limitations of the Study

This study was limited in several areas:

1. The study was limited to band and non-band participants.
2. The variables for this study were limited to the following: (a) grade point average, (b) English 1 End-of-Course test proficiency, (c) Algebra 1 End-of-Course test proficiency, (d) Biology End-of Course test proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rates.
3. Socio-economic status was not utilized because data was unavailable.
4. Ethnicity was not considered because Craven County Schools was only interested in data of all band and non-band participants.
5. Specific causes and effects of differences were not examined during this study.
6. Only traditional high schools from Craven County were utilized in the study.
7. Other variables that might have influenced band student achievement data were not considered in this study.

Definition of Terms

The terms used throughout this study are defined as follows:

ABCs- Until the end of the 2011-12 school year, the ABCs of Public Education was North Carolina's comprehensive plan to improve public schools. Implemented in the 1996-97 school year, the model focused on schools meeting growth expectations for student achievement

as well as on the overall percentage of students who scored at or above grade level. Schools received recognition based on student growth and the percentage of students' scores at or above grade level ("Education acronyms", Retrieved from <http://www.ncpublicschools.org/acronyms>).

Academic performance-The academic progress of students for this study was measured using the following criteria: (a) grade point average, (b) English 1 End-of-Course test proficiency, (c) Algebra 1 End-of-Course test proficiency, (d) Biology End-of Course test proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rates.

Accountability and Curriculum Revision Effort (ACRE) - This describes all of the work performed by the NCDPI to implement the recommendations contained in the State Board of Education's "Framework for Change: The Next Generation of Assessments and Accountability" document. This document describes a new vision of the North Carolina Standard Course of Study, student testing, and district and school accountability ("Education acronyms", Retrieved from <http://www.ncpublicschools.org/acronyms>).

Athletics - Exercises, sports, or games that are engaged in by athletes. Team sport activities where students compete against other high schools in events sponsored by the North Carolina High School Athletic Association ("Merriam-Webster", Retrieved from <http://www.merriam-webster.com/dictionary/athletics>).

Adequate Yearly Progress-A measure used by North Carolina to gauge yearly progress of students meeting proficiency in reading and mathematics ("Education acronyms", Retrieved from <http://www.ncpublicschools.org/acronyms>).

Band Participant-A Craven County high school student enrolled in a band class during the 2011-2012 school year.

Common Core Standards - Academic standards for math and literacy adopted by forty-eight states in the United States. These standards have a focus on college and future readiness. ("Common core state," 2010).

Doctorate of Education (EdD) - The terminal doctoral degree that has a research and/or professional focus. It prepares the student for academic, administrative, clinical, or research positions in educational, civil, and private organizations ("Doctor of education", Retrieved from http://en.wikipedia.org/wiki/Doctor_of_Education).

Doctorate of Philosophy (PhD) - The academic level known as a Doctorate of philosophy varies considerably according to the country, institution, and time period, from entry-level research degrees to higher doctorates. A person who attains a doctorate of philosophy may often be referred to as a doctor ("Doctor of philosophy", Retrieved from http://en.wikipedia.org/wiki/Doctor_of_Philosophy).

Dropout rate- An "event dropout rate" is reported for each LEA and charter school in the state. This is the number of students in a particular grade range dropping out in one year divided by a measure of the total students in that particular grade range ("Dropout data and collection process", Retrieved from <http://www.ncpublicschools.org/research/dropout/>).

End-of-Course test- The 2011-2012 North Carolina End-of-Course tests were given to high school students and based on the North Carolina state standards, which define what students should be learning each year. The goal is for all students to score at or above the proficient level on the EOC exams. During 2011-2012, End-of Course tests were administered for Algebra I, English I and Biology. The ABC accountability system and the No-Child-Left-Behind (AYP) program utilized data from these tests ("Great schools", Retrieved from <http://www.greatschools.org/test/landing.page?state=NC&tid=34>).

Extracurricular activity or program- Programs or activities that are performed by students outside the realm of or in addition to the curriculum taught during the school day ("Extracurricular activities", Retrieved from http://en.wikipedia.org/wiki/Extracurricular_activity).

Fisher's exact test- Fisher's exact test is a statistical significance test used in the analysis of contingency tables where sample sizes are small ("Fisher's exact test", Retrieved from http://en.wikipedia.org/wiki/Fisher's_exact_test)

Mann-Whitney U test-A nonparametric test used to test for differences between two groups. This test is the nonparametric alternative to the t-test. The t-test compares means and the U Test compares medians (Pallant, 2010).

Non-band participant-A high school student not enrolled in a high school class during the 2011-2012 school year.

North Carolina Window of Information for Student Education (NCWISE) -A computer program utilized state-wide in North Carolina that provides educators with access to data on a student's entire career in the public school system ("Education acronyms", Retrieved from <http://www.ncpublicschools.org/acronyms>)

North Carolina Essential Standards-Academic standards developed by educational policy makers in North Carolina for all courses and subjects not included in the Common Core National Standards. The North Carolina Essential Standards replaced the North Carolina Standard Course of Study ("Accountability and curriculum revision effort", Retrieved from <http://www.ncpublicschools.org/acre/standards/>)

Out-of school suspension (OSS) -Each day that students were suspended out of school as recorded in the North Carolina Window of Information for Student Education (“Education acronyms”, Retrieved from <http://www.ncpublicschools.org/acronyms>).

Period attendance-Daily attendance for each class period as reported in the North Carolina Window of Information for Student Education, NCWISE.

Student Information Management System (SIMS) - A computer program utilized state-wide in North Carolina to manage student information during the Overton (2001) study.

Organization of the Study

The balance of this study is divided into five chapters. Chapter 1 provided introductory information. Chapter 2 included a review of current literature related to the impact of extracurricular activities on academic performance. The literature review is divided into sections that provide information relevant to the topic of this study including the history of extracurricular activities, benefits of extracurricular activities, participation in athletics, participation in music and Arts education, participation in band instruction, and the relationship between music, reading and math. It further provides a review of literature related to each of the variables in the study including grade point average, period attendance, dropout rates, and the North Carolina End-of-Course Test scores. Chapter 3 explicates the methodology used in the study. Chapter 4 is an analysis and discussion of data obtained from the research. Finally, Chapter 5 is a summary of conclusions and contains recommendations based on findings as well as suggestions for additional research on similar topics.

CHAPTER 2: REVIEW OF LITERATURE

This review of literature will begin with introductory information followed by several sections, including the History of Extracurricular Activities, the Benefits of Extracurricular Activities, Participation in Athletics, Participation in Arts Education, Participation in Music and Arts Education, Participation in Band Instruction, Music, Reading and Mathematics, Independent Variables, Grade Point Average, Period Attendance, Dropout Rate, North Carolina End-of-Course Scores, and the Number of Days of Out-of-School Suspension. Study problems will be addressed followed by a brief summary of the chapter.

There is a preponderance of research that suggests that students who are engaged in school will become academically successful. Likewise there is evidence that students who are disengaged and alienated may eventually drop out. According to Archambault, Janosz, Morizot, and Pagani (2009), the risk of students dropping out of school increases when they become disconnected from school cultures and activities. A review focusing on dropout prevention by Martin, Tobin, and Sugai (2002) asserted that extracurricular activities encouraged the growth of social support systems and assisted students with the development of individual goals. Students were able to identify and define personal interests by participating in extracurricular activities. In the view of Lessard, Butler-Kisber, Fortin, Marcotte, Potvin and Royer (2008), dropouts considered themselves more engaged when they felt like they fit in with their peers.

A study by Holland and Thomas (1987) described the prevailing philosophies about extracurricular activities that are still accepted by educators today. According to their research, there are two concepts that are common among administrators and school systems. One concept is that schools should focus on the transmission of formal knowledge and that extracurricular

activities only provide a source of relaxation or fun for students. This academic position believes that extracurricular activities serve no important position in the educational process when schools are pursuing academic excellence.

The second more widely accepted concept suggests that extracurricular activities contribute to the overall development of the student. According to this concept, the mission of the schools is to provide experiences that are appropriate for the needs of each student in order to ensure the whole development of each child. An appropriate academic course of study combined with experiences provided by curricular and extracurricular opportunities are required to educate the whole child (Holland & Thomas, 1987). A more recent study about the role of school based extracurricular activities in regard to adolescent development concluded that school based interventions should address the variety of high school experiences that help adolescents complete their basic schooling. When these activities contribute to a positive social-emotional learning environment, they lead to better adolescent achievement and contribute to a healthier lifestyle (Feldman & Matjasko, 2005).

History of Extracurricular Activities

In many parts of the country, extracurricular activities became a part of secondary education during the latter part of the nineteenth century. A study of Ithaca High School during this era provides information about how high school extracurricular activities evolved. In the beginning extracurricular activities included fraternities and secret societies and were student run organizations. The addition of sports teams followed; initially these teams were student run organizations that lacked guidance or control from school boards or administrators. A variety of scholars have reported that school administrators of the late nineteenth century and the early twentieth century were interested in gaining control of student extracurricular activities because

they were concerned that the students would not properly represent their educational institutions (Terzian, 2005).

As schools worked to gain control of extracurricular activities in the early twentieth century, school administrators noticed that participation in secret societies, fraternities and academic clubs had a positive effect on discipline in the school. Many of the organizations developed sports teams and they played one another. School boards eventually implemented athletic councils to regulate and control the football, basketball and baseball teams. Sports led to the advent of pep bands, marching bands, singing groups, additional academic clubs and other student organizations. Local school boards and administrators hoped that participation in extracurriculum would contribute to the development of high school students. It was their desire that participation would help students mature into civic minded and responsible citizens (Terzian, 2005).

In another historical study that focused on Ithaca High School during the years between 1916 and 1941, Terzian (2004) concluded that administrators believed that participation in athletics and school organizations was instrumental in the development of school spirit. A historical study of a Minneapolis junior high school band program from 1923-1940 concluded that participation in the band and band performances were important for building and maintaining connections with the community (Hamman, 2010). Recently, a researcher concluded that in order to promote civic education, schools should provide quality extracurricular activities and student government organizations (Youniss, 2011).

According to Gholson (1985), the historical development of extracurricular activities in America can be categorized into the following three eras: 1870-1900, the period of rejection; 1900-1920, the period of passive acceptance; and 1920-1956, the period of active acceptance

and encouragement. During the first era, 1870-1900, educators believed that extracurricular activities provided few advantages for students. Educators began to see the benefits of extracurricular activities during the early 1900s and began to believe that participation may have a positive educational benefit for students. From 1920-1956, educators gradually began to promote extracurricular activities and parent and civic organizations became involved, supporting extracurricular activities financially while believing that participation had a positive impact on student development. Today, policy makers, educators and parents continue to understand that extracurricular activities can benefit student development as part of a high school program (Feldman & Matjasko, 2005).

Benefits of Extracurricular Activities

There is also a body of research that provides information about the benefits of participation in extracurricular activities. A Ream and Rumberger (2008) study about student engagement among Mexican and non-Latino white students found that students who participate in extracurricular activities are more integrated in school, have less behavior problems, and are more likely to complete school. Participation in extracurricular activities may also improve student achievement in academic endeavors. According to a 1980 study by Morgan and Alwin, participation in extracurricular activities may increase the attainment of skills and encourage commitment to an organization. This may translate into increased achievement.

In the view of McNeal (1995), participation in extracurricular activities promotes integration into the formal school environment. He concluded that by integrating into extracurricular activities, students actually integrated into peer groups. These peer groups are formed based on developing or mutual interest in a topic, discipline or activity. The McNeal study grouped extracurricular activities into three subgroups: athletics, academic and

vocational clubs and fine arts. In his view, each of these subgroups has a varying level of impact on the dropout issue (McNeal, 1995).

McNeal (1995) stated that athletic participation significantly reduced the possibility of a student dropping out of high school. Students who participate in certain activities develop relationships with peers who are like-minded. The relationships that are established when students are involved in engaging extracurricular activities may have a positive influence on student opinions regarding their school and their probability of graduating (Morgan & Alwin, 1980). To the contrary, Lessard et al. (2008) concluded that delinquency, truancy and school dropout were often the consequences of peer affiliation as well.

A study of extracurricular activities and adolescent development by Eccles, Barber, Stone and Hunt (2003) reaffirmed McNeal's assumption by concluding that participation in team sports is a significant element in regard to academic outcomes. Specifically, participation in team sports suggests several positive effects, including association with academically successful peers, exposure to academic values, enhanced self-esteem, and a high sense of personal efficacy (Eccles et al., 2003).

McNeal (1995) concluded that participation in the fine arts may affect student decisions in regard to dropping out of high school but on a more individual basis. McNeal further surmised that the skills and knowledge that fine arts students acquire in some way reduces the students' likelihood of dropping out. In his opinion, the fine arts instill a less competitive focus in students and encourage an environment that is more cooperative. In a 2010 article, Leenman stated that the study of music leads to students reaching their academic goals and prepares them for success in the future.

In regard to academic and vocational clubs and organizations, McNeal (1995) believed that participation did not reduce the likelihood of dropping out or increase academic performance. Contrary to what McNeal presumed, Eccles et al. (2003) concluded that adolescents who participated in academic clubs enjoyed school more, had higher than expected high school grade point averages, and were more likely to enroll in college than their non-involved peers.

Participation in Athletics

There is extensive research that demonstrates the impact of participation in athletics in regard to academic achievement. There are two comprehensive studies that were performed in Eastern North Carolina near the turn of the twenty-first century that specifically examine the effect of participation in athletics in the state of North Carolina. In 1995, Whitley completed a comprehensive examination of 133 North Carolina high schools including 126,700 students for the North Carolina High School Athletic Association. He utilized the state's Student Information Management System (SIMS) to retrieve data comparing student athletes with non-athletes. A computer program was developed to glean the data relevant to the study.

The study used five criteria to make the comparisons including (a) grade point average, (b) attendance rate, (c) discipline referrals, (d) dropout rate and (e) graduation rate.

Athletes significantly outperformed non-athletes according to these criteria. The mean Grade Point Average (GPA) for athletes over the three year period of the study was 2.86 compared to the non-athlete GPA which was 1.96. The mean average for athletes for the number of days missed by athletes was 6.52 days while the mean average for non-athletes was 12.57 days. The number of discipline referrals for athletes was significantly lower than for non-athletes. Non-athletes accounted for 10% more discipline referrals than athletes. The dropout rate

for athletes was a scant 0.7% while 8.98% of non-athletes dropped out during the study. The graduation rate for non-athletes was 4.9% lower than the graduation rate for athletes (Whitley, 1995).

In 2001, Overton completed another study in the state of North Carolina that compared the academic performance of athletes and non-athletes. In this comprehensive study, Overton used data from 133 North Carolina high schools that examined the performance of over 125,000 students. Overton duplicated the Whitley study, but unlike Whitley, Overton included an examination of scores from the recently adopted North Carolina standardized End-of Course tests. The seven criteria utilized in the study included (a) grade point average, (b) attendance rate, (c) discipline referrals, (d) dropout rate and (e) graduation rate (f) English 1 End-of-Course scores, and (g) Algebra 1 End-of-Course scores.

Once again athletes outperformed non-athletes. The mean GPA for athletes was 2.98 compared to 2.17 for non-athletes (see Table 1). Algebra 1 End-of-Course scores for athletes were 8% higher on average than non-athletes, and athletes scored 11.5% higher than non-athletes on the English 1 End-of-Course test. Non-athletes missed an average of 5.6 days more than athletes during a 180 day school year and once again averaged 105 more discipline referrals than athletes. As indicated in Table 2, the dropout discrepancy was significant with only 0.65 of athletes dropping out compared to 10.32% for non-athletes, and the graduation rate for athletes was 5.89% higher than it was for non-athletes (Overton, 2001).

The first North Carolina study concluded that participation in athletics proved to be a motivational factor and that there was a direct relationship between athletic participation and academic success (Whitley, 1995). The Overton (2001) study emphasized the importance of encouraging athletic participation in high schools in North Carolina. Also, Overton (2001)

Table 1

Overton (2001) Comparison of Means for Variables Comparing Athletes and Non-Athletes

Variable	Mean GPA	Mean Alg. 1	Mean English 1	Days Absent	Referrals
Athlete	2.98	66.1	61.5	6.3	33.3
Non-Athlete	2.17	57.9	50.9	12.0	41.8

Note. $p > .0012$.

Table 2

Overton (2001) Comparison of Means for Variables Comparing Athletes and Non-Athletes

(Dropout Discrepancies)

Variable	Graduation Rate	Dropout Rate
Athletes	99.5	.6
Non-Athletes	93.5	10.3

Note. $p > .0012$.

recommended the implementation of similar studies of the impact of participation in other extracurricular activities, and he specifically recommended a study that compared the academic achievement of high school band participants with non-participants.

There are other studies that have examined the correlation between various academic criteria and participation in athletics. In a study of juniors and seniors at an exemplary high school in Omaha, Nebraska, athletes from both genders outscored non-athletes in three academic categories including class rank, grade point average, and math scores (Stegman & Stephens, 2000). In another study in Nebraska, academic performance for athletes was compared to academic performance for students who participated in other extracurricular activities. Students who participated in extracurricular activities had a higher grade point average and a higher rate of school attendance than students who did not participate. One negative correlation noted in this study concluded that students who only participated in athletics received more discipline referrals than students who participated in non-sports activities (Dick, 2010).

Participation in Arts Education

A shift in focus to literacy and numeracy combined with financial crisis has led to reduction of funding for arts in many school systems. Reductions in arts education have coincided with an increase in the number of students who are becoming less engaged in school. Research supports the notion that participation in arts education may increase engagement for students as schools transform to 21st century school models (Caldwell & Vaughn, 2011). It has also been demonstrated that there is a positive relationship between academic success and enrollment in arts courses and that participation in the arts benefits students socially and personally. In addition, it is supposed that the benefits from arts education may continue after students have completed their formal education (Parsons, 2009).

In 2008, President Obama became an advocate for investing in arts education. The president appointed a commission to investigate the challenges and opportunities facing arts education. This committee determined that arts education could be utilized as a tool for school-wide reform. At an elementary school in Monroe, North Carolina, a K-5 school that was struggling academically partnered with a performing arts center in nearby Charlotte. The entire school embraced the use of the arts as a fundamental strategy for teachers and students to use in all subjects. Over a three year period all tested grades showed significant increases in math, reading and science (Dwyer & President's Committee, 2011).

In several limited studies involving participation in arts education, participants have demonstrated positive academic and social outcomes when compared to non-participants. These smaller studies are essential to the body of literature in regard to the impact of music participation on academic achievement; however, a weakness of available literature involving arts participation is the lack of large longitudinal studies that compare participants and non-participants over multiple years. In a large longitudinal study supported by the National Endowment for the Arts in 2012, an attempt was made to begin filling this gap (Catterall & National Endowment for the Arts, 2012).

Researchers supported by the National Endowment for the Arts utilized four large longitudinal databases to conduct this study and their labors yielded three main conclusions. First, at-risk students who are exposed to heavy arts instruction show more positive outcomes than at-risk students who do not participate in the arts. Secondly, at-risk students who engage heavily in arts instruction achieve closer to or exceed the achievement of students who are not at-risk. Finally, positive relationships between arts and civic engagements are noted in higher socioeconomic students, but positive relationships between arts and civic engagements are much

higher among at-risk populations who are involved in the arts (Catterall & National Endowment for the Arts, 2012). In an earlier study, Catterall (1997) concluded that students involved in the arts exceed the achievements of those who were not involved regardless of socioeconomic status. All students, even the lowest 25% of the educational and economic scale, achieved at a higher rate when involved in instruction in the arts.

In the last five years, researchers have shown an interest in the correlation between arts education and brain development in children. They have concluded that music training is correlated with phonological awareness, a predicator for early reading skills. They have further concluded that practicing a specific art form improves attention skills and general intelligence, and that arts integration techniques may coincide with improved-long term memory (Dwyer & President's Committee, 2011). A balanced education in the arts may help students to improve observation skills, critical thinking, spatial reasoning and temporal skills, and may improve the ability to reason (Walker & Education Partnerships, Inc., 2006).

Participation in Music Education

There is an emergent body of research that reveals that participation in music instruction has a positive impact on performance in other academic disciplines. Research indicates that music is important in regard to the development of a child. Additionally, researchers believe that exposure to music and training in music leads to augmented brain activity. Increased brain activity benefits and increases a child's ability to perform certain academic tasks (Yoon, 2000). In a study of parental opinions about children involved in a choral program, an organization called Chorus America concluded that children who participate in choir exhibit beneficial life skills and academic success. Fifty-four percent of the surveyed parents of chorus participants claimed that their children improved academically since they joined the chorus. The parents also

reported other benefits including stronger self-worth and a higher level of creativity. Others involved in the survey claimed to observe increased self-confidence and better memory. According to this study, participation in a chorus class or program is beneficial for a child's academic and social development (Gadberry, 2010).

Music participation may lead to high test scores and is vital to preparing students for the 21st century workplace. In many ways musical ensembles are microcosms of society. Young musicians learn to communicate, analyze, synthesize, evaluate, adapt and work together. They learn to follow the direction of the leader and to recognize the importance of their own contributions, individually and in relation to the group. Through the study of music they are exposed to music, history, culture, literature, language and mathematics (Leenman, 2010). Also, adolescents involved in the performing arts are less frequently engaged in risky behaviors than those who are not involved in the performing arts. This is particularly true for behaviors involving the consumption of alcohol (Eccles et al., 2003).

In a comprehensive study of 180,000 high school sophomores, the National Center for Educational Statistics, a branch of the United States Department of Education, gathered information from almost 1,500 schools. Approximately 23,000 of these students were involved in music classes. The study found that music participants are elected to class offices, receive academic honors and receive higher grades than non-participants (Morrison, 1994).

The desire to raise test scores in math and science has influenced school policy makers to discount studies that reveal how participation in music courses has a positive effect on student academic performance. Music participation is a key component in raising test scores and preparing students for the 21st century (Leenman, 2010). After comparing the mean grade point averages of participants in extracurricular activities with non-participants in a rural high school

setting, Watkins (2004) concluded that elimination of extracurricular activities including band, would increase dropout rates and would hinder student pursuit of higher educational goals. He further concluded that participation in extracurricular activities resulted in higher academic performance when measured by grade-point-average. Watkins further concluded that non-participants achieved at a lower level.

Participation in Band Instruction

According to Leenman (2010), policy makers, administrators, and parents often consider curricular programs in the arts as extracurricular activities. Arts programs are often threatened with reduction or elimination during times of budget shortfalls or cuts. School administrators may consider instruction in the arts as fluff that is not as important as core curriculum courses. Budget cuts in education that lead to elimination of arts programs can cripple the development of a child, can hinder the future performance of a child on standardized tests, and can limit a child's socialization and communication skills (Leenman, 2010).

A recent study examined the academic performance of students at a large, suburban high school in Tennessee. The study compared the academic performance of marching band students during the fall marching band season with academic performance of the same students during the spring off season. It also compared band students to a random sample of non-band participants. This study focused on grade point average and attendance and considered the gender and grade level of each student. The multiple regression process was utilized to determine the extent to which differences existed between in and out of season marching band participants in regard to grade point average (GPA) and attendance while accounting for gender and grade level. The researcher concluded that participation in marching band did not have a significant impact upon GPA or attendance of participants when compared to non-participants (Vitucci, 2010).

The Vitucci study was a narrow analysis that compared the performance of marching band students during the first semester to the performance of the same marching band students who were not involved in a marching band during the second semester. Even though the results were not significant in regard to GPA and attendance, the researcher relayed the opinions of students involved in the study who stated that being in band created great memories and improved their ability to work together in a group (Vitucci, 2010).

Conversely, a recent examination of fifth grade band students revealed that there was a statistically significant difference in reading and math scores of participants in an instrumental music program when compared to non-participants. The researcher concluded that the arts make an instructional difference in regard to learning. The researcher further suggested that participation in the arts can stimulate, develop, and refine cognitive and creative skills and draw upon multiple intelligences of students (McLelland, 2005). In another study that scrutinized the impact of participation in athletics and music classes, 346 students were observed over a four year period in grades five through nine. Results of this study revealed that band participants and other musicians experienced higher academic achievement than non-participants and non-athletes. Further analysis showed that participants in music classes experienced higher academic achievement than participants in athletics; additionally, over time the chasm between the athletic participants and music participants increased. The schools characterized in the study included a variety of music classes. Results further indicated that as non-music participants got older, they experienced an overall reduction in test scores. Music students did not experience a drop in test scores as they grew older (Schneider & Klotz, 2000).

Another recent study examined three middle schools and three high schools in Baltimore County, Maryland. The focus of the study was to compare the academic achievement and

attendance of students who were involved in a school sponsored instrumental music class with students who did not participate in an instrumental music class. State assessment scores including the Maryland School Assessment and the Maryland High School Assessment were compared. There was no statistically significant difference in regard to reading and math tests and attendance when comparing instrumental music participants with non-participants in the three middle schools that were observed. The researcher concluded that participation in a middle school instrumental music program had no significant impact on academic achievement or attendance (Davenport, 2010).

In the same Maryland study, researchers discovered that students from the three high schools who were enrolled in school sponsored instrumental music classes scored significantly higher on both sections of the Maryland High School Assessment. In addition, attendance rates for instrumental music participants were significantly higher than non-participants. Based on the conclusions of this inquiry, researchers suggested that students who participate in a high school instrumental music program have higher academic achievement on state assessments and higher attendance rates than non-participants (Davenport, 2010).

In a 2004 study of a southern rural high school, Watkins agreed with Whitley (1995) when he concluded that participation in athletics resulted in higher GPAs when compared to non-athletes. His research further revealed that participation in any extracurricular program including band resulted in higher grade point averages when compared to non-participants. Finally, Watkins concluded that participation in athletics and at least one other extracurricular activity resulted in the largest impact upon grade point average.

Overton (2001) reached similar conclusions about athletic participation when comparing the academic performance of athletes and non-athletes. Athletes scored significantly higher on

standardized tests and had significantly higher grade point averages. Overton noticed that the body of research examining the effect of extracurricular activities other than athletics was limited. He recommended additional research to compare the academic performance of another extracurricular activity and specifically mentioned the need for a study of the impact of participation in a band program on academic achievement.

Music, Reading and Mathematics

Elimination of music instruction in schools may have a negative impact on achievement in math and reading. There is empirical evidence that indicates that instruction in music impacts academic achievement in math and reading. A Union University study in 2010 compared two school systems. System A featured a strong music education program in the elementary and middle schools and System B had no music education program at all. The research focused on perceptions of teachers, administrators and board members in regard to the notion that music positively impacts academic achievement, school climate and learning environment. Both school systems agreed with the notion that music did have a positive impact (Deere, 2010).

In the examination of the two school systems, the researcher also looked at state test scores. In System A, the system with the outstanding music programs, students scored significantly higher on the fourth grade state reading and math tests. The researcher concluded that there was a strong correlation between music instruction and math and reading achievement for fourth grade students. Higher scores for reading and math were also recorded for eighth grade students in reading and math; however, the math scores were not high enough to establish a statistical correlation. The reading scores were high enough to suggest that there was a strong correlation between music instruction and reading achievement. Overall, the study concluded

that there was a correlation between music instruction and math and reading achievement (Deere, 2010).

In Cincinnati, Ohio, a group of researchers were concerned about low math achievement in an elementary school. The teacher used pre-tests and student and parent questionnaires in an attempt to determine the reasons for the low achievement. They discovered that reasons for low achievement included lack of understanding of math concepts, lack of homework support at home, low socio-economic status, recurrent staff turnover, and student disabilities. A solution strategy was devised to address the issues that were found to be causing the low achievement. The teacher exposed students to the music of Wolfgang Mozart and School House Rock and the teacher made songs that inspired and prepared students while executing strategies to teach mathematical concepts. The strategies of teaching math combined with music led to a significant increase in achievement for math students on targeted objectives for second and fourth grade students. Significant improvement was even recorded for students with disabilities (Bryant-Jones, Shimmins, & Vega, 2003).

Comparison of the Overton Study and the Craven County Study

This study was intended to replicate the methodology of the Overton study while addressing the problem of practice in the Craven County schools. During the Overton study in 2001, the North Carolina High School Athletic Association deemed that an examination of certain variables was sufficient to determine the difference in the educational performance of athletes and non-athletes (Overton, 2001). The Craven County schools deemed that these same variables with minor differences were sufficient to address the problem of practice in the Craven County school system.

In the Overton (2001) study, a program was created to retrieve information from the Student Information Management System (SIMS). At that time, North Carolina schools utilized the SIMS program to manage student information and data. At the time of this inquiry, North Carolina schools utilized the North Carolina Window of Information for Student Education (NCWISE) program to manage student information and data.

Overton (2001) examined the following variables in regard to the academic performance of athletes and non-athletes: (a) grade point average, (b) English 1 End-of-Course test, (c) Algebra 1 End-of-Course test, (d) attendance rates, (e) discipline referrals (f) dropout rates, and (g) graduation rates. The change from SIMS to NCWISE and the North Carolina ABCs accountability system predicated some variation between this study and the Overton (2001) study.

During the 2011-2012 school year, the North Carolina ABCs accountability system assessed Algebra 1, English 1 and Biology. For this reason, the End-of Course test scores from these subjects were considered relevant for this inquiry. The Overton (2001) study did not include Biology scores. In addition, NCWISE records period attendance for high school students as opposed to daily attendance. Subsequently, this inquiry will examine period attendance as opposed to daily attendance.

Furthermore, the current graduation cohort in North Carolina is a four year cohort. This inquiry was based on data from the 2011-2012 school year. Consequently, an examination of the four year cohort data was not included.

To clarify, the variables that were used for the Craven County inquiry included the following: (a) grade point average (b) English 1 End-of-Course test proficiency (c) Algebra 1

End-of-Course test proficiency (d) Biology End-of Course test proficiency (e) period attendance (f) number of days of out-of-school suspension, and (g) dropout rates.

The following sections will include a review of literature that discusses the independent variables used in the study. The headings are as follows: (a) grade point average, (b) period attendance, (c) dropout rates, and (d) North Carolina End-of-Course test scores.

Grade Point Average

In addition to the research that has already been mentioned, there is additional research that examines the relationship between music instruction and student grade point average. An examination of the 2007-2008 freshman class at Whitworth University in Spokane, Washington revealed that students who remained in music classes during high school had higher grade point averages and standardized test scores when entering Whitworth than non-music participants in the remainder of the freshman class. In addition, the study revealed that students who remained involved in music instruction while in college continued to be above average students when compared to others in the freshman class (Olson, 2009).

A narrow study of a high school in Nebraska observed the relationship between students who achieved some credits in music courses and non-music participants. Initially, students with two credits in music were compared to non-participants. There was no significant difference between the two groups. Students were then categorized by the number of music credits that they achieved in high school. Freshmen with two credits, sophomores with four credits, juniors with six credits and seniors with eight credits were included in Group A. All other students were included in Group B. Students with music credits performed better than non-participants; however, the data did not reveal statistically significant differences between the two groups.

However, there was a gradual increase in the grade point averages as the number of music courses increased (Cox & Stephens, 2006).

In a University of Nebraska study of middle school band students using the Iowa Basic Skills test as an identifier, researchers found that there is a relationship between literacy achievement and participation in instrumental music classes. Upon completion of the study, researchers suggested that participation in instrumental music classes affects cognitive functions in middle school students and has an impact on other subjects and disciplines of study (Kurt, 2010).

Period Attendance

There is a dearth of research in regard to the impact of extracurricular activities on period attendance as recorded in a high school block schedule. Attendance is often an add-on statistic in the body of research that deals with other more prominent academic achievement variables. The scant research dealing with extracurricular activities and attendance usually reports data on daily attendance as opposed to period attendance.

Both Overton (2001) and Whitley (1995), support the notion that participation in athletics has a significant impact on school attendance rates. Participants in athletics had significantly higher attendance rates when compared to non-participants in athletics. In a study of 19,543 high school students in a Colorado school district, researchers scrutinized the effects of participation in extracurricular activities. They noted that there were significantly lower absences among female participants in extracurricular activities when compared to non-participants (McCarthy, 2000). In a study in Nebraska, the academic achievement of graduates from 2007-2008 and 2008-2009 who participated in extracurricular activities was compared to

non-participants. Students who participated in extracurricular activities had a higher rate of school attendance than students who did not participate (Dick, 2010).

The 2010 study by Vitucci did not support the premise that participation led to higher attendance. She concluded in her study that participation in the fall marching band had no significant impact upon attendance for students in a large high school in Tennessee. In a study of the effects of after school arts programs on academic achievement including attendance, there were correlations between other variables, but there was no relationship between participants and non-participants in regard to attendance (Gacherieu, 2004). In the Maryland study of three middle schools and three high schools, the researcher concluded that participation in a middle school instrumental music program had no significant impact on academic achievement or attendance; however, they suggested that students who participate in a high school instrumental music program have higher attendance rates than non-participants (Davenport, 2010).

Dropout Rate

A review focusing on dropout prevention by Martin et al. in 2002 asserted that extracurricular activities encouraged the growth of social support systems and assisted students with the development of individual goals. Students were able to identify and define personal interests by participating in extracurricular activities. Participation in extracurricular activities may also improve student achievement in academic endeavors. According to a study by Morgan and Alwin (1980), participation in extracurricular activities may increase the attainment of skills and encourage commitment to an organization. This may translate into increased achievement. The relationships that are established when students are involved in engaging extracurricular activities may have a positive influence on student opinions regarding their school and their probability of graduating (Morgan & Alwin, 1980).

McNeal (1995) classifies extracurricular activities into three subgroups: athletics, academic and vocational clubs, and fine arts. In his view, each of these subgroups has a different level of impact on the dropout issue. McNeal suggested that athletic participation significantly reduces the possibility of a student dropping out of high school.

A study on extracurricular activities and adolescent development by Eccles et al. in 2003 reaffirmed McNeal's assumption by concluding that participation in team sports is a significant element in regard to academic outcomes. Specifically, participation in team sports suggests several positive effects, including association with academically successful peers, exposure to academic values, enhanced self-esteem, and a high sense of personal efficacy. The relationships developed with coaches and others also contributed to superior guidance and management that may not have been available to students not involved in athletics. Eccles et al. (2003) further concluded that athletes claimed to like school more than non-participants and were more likely to attend college.

McNeal (1995) concluded that participation in the fine arts may affect student decision in regard to dropping out of high school but on a more individual basis. It is his view that fine arts activities are a method for attaining cultural capital, and the result of participation is access to the more "elite" stratum of the school population. McNeal (1995) further surmised that the skills and knowledge that fine arts students acquire in some way reduce the students' likelihood of dropping out. In his opinion, the fine arts instill a less competitive focus in students and encourage an environment that is more cooperative.

Regardless of the extracurricular activity, there is research that supports the notion that students who participate in extracurricular activities are involved with additional key adults who can provide guidance and support in a variety of spheres (Eccles et al., 2003). Coaches,

music directors and other teachers who sponsor extracurricular activities are often highly motivated individuals who are promoters for their various programs. It can be presumed that student relationships with these adults may influence student engagement and opinions about school in a positive manner.

North Carolina End-of-Course Test Scores

In a comprehensive study that used data from 133 North Carolina high schools and examined the performance of over 125,000 students, the researcher included North Carolina standardized End-of-Course test scores as a measure of academic performance. This study examined the scores from the North Carolina End-of-Course tests for Algebra 1 and English 1. Participants in athletics scored significantly higher on these measures when compared to non-athletes (Overton, 2001).

During the 2011-2012 school year, there were three high school subjects that were required to administer a North Carolina End-of-Course test. They included English 1, Algebra 1 and Biology. There is no available inquiry that demonstrates a relationship between participation in band or music and performance on the North Carolina End-of-Course tests.

Number of Days of Out-of-School Suspension

In a comprehensive study in North Carolina that compared the academic performance of athletes and non-athletes, the number of discipline referrals for athletes was significantly lower than non-athletes (Whitley, 1995). In another comprehensive study that used data from 133 North Carolina high schools and examined the performance of over 125,000 students, the Whitley study was duplicated. In this study non-athletes averaged ten percent more discipline referrals than athletes (Overton, 2001).

In a Tennessee study of heterogeneous and homogeneous instructional groupings, two groups of 120 eighth grade students were selected. Each group contained twenty at-risk students and was comprised of matched students. The heterogeneous group of students was all enrolled in the middle school band, while the homogeneous group included only non-band participants. Three data points were observed including the number of days absent, the number of days of in-school suspensions and the number of days of out-of-school suspension. The results showed that the band students who were heterogeneously grouped demonstrated lower rates of absences, in-school suspensions, and out-of-school suspension (Hamm & Clawson, 1992). In a study in Nebraska, the academic achievement of graduates from 2007-2008 and 2008-2009 who participated in extracurricular activities was compared to non-participants. Students who participated in extracurricular activities had a lower rate of disciplinary referrals than students who did not participate; however, students who participated in athletics had a higher rate of discipline referrals than students who participated in other extracurricular activities (Dick, 2010).

The specific body of research that investigates the relationship between participation in high school band classes and the number of days of out-of-school suspension is limited.

Study Problems

There are many variables that impact differences between groups of students. Specifically, there are variables that impact the differences between band and non-band participants when comparing academic performance between the two groups. For many years there has been a strong correlation between socioeconomic status and academic achievement. The exact nature of the correlation continues to be debated in research chronicles but a

universal acceptance is emerging that implies that socioeconomic status is an important variable when considering academic achievement (Leonard & Box, 2009).

The positive relationship between socioeconomic status and academic achievement is established, but how it varies with age is not. Canadian researchers have suggested that the gap in achievement affected by low socioeconomic status increases with the age of the student. The widest increase occurs between ages eleven and fifteen. This widening gap affects students during the high school years (Caro, 2009).

Students' academic performance is a function of a variety of interwoven and intricate elements. One product of low socioeconomic status is the lack of technology in the home. Researchers suggested that the lack of technology in the low socio-economic status home negatively affects academic achievement (Sun & Metros, 2011).

There are two reasons that socioeconomic status was not examined as part of this study. First, this study was a replication of the 2001 Overton study on athletics, and socioeconomic status was not included in that study. Secondly, federal law forbids high school principals from having lists of the low socioeconomic status students and that limits availability of data. It would have been useful to this inquiry if socioeconomic status was examined as an independent variable.

Summary

An appropriate education for the whole child should include a relevant academic course of study and experiences provided by extracurricular opportunities (Holland & Thomas, 1987). There is research that suggests that there is a correlation between participation in extracurricular activities and academic achievement (McNeal, 1995). There is also a resilient

body of research that supports this notion in regard to grade point average, daily attendance, and dropout rates.

Additionally, there is a body of research both nationally and specific to North Carolina that supports the notion that participation in athletics has a positive effect on academic achievement. The North Carolina studies by Whitley (1995) and Overton (2001) specifically examine the correlation between participation in athletics and academic achievement. Both of the North Carolina studies suggest that participation in athletics leads to higher academic performance when comparing athletes to non-participants in athletics.

One of the North Carolina studies on the impact of athletics recommended that future research examine the correlation between participation in other extracurricular activities and academic performance. The study specifically recommended that a study be completed that compared band participants with non-band participants (Overton, 2001).

It can be suggested that students who participate in a high school instrumental music program have higher academic achievement on state assessments and higher attendance rates than non-participants (Davenport, 2010). It was the intention of this study to provide research specific to a North Carolina school system that examines the correlation between high school band and non-band participants in regard to academic performance.

CHAPTER 3: METHODOLOGY OF THE STUDY

As previously stated in Chapter 1 and Chapter 2, this study was intended to replicate the methodology of the Overton study while addressing the problem of practice of creating transitional courses that conflicted with band classes in the Craven County schools. During the Overton study in 2001, the North Carolina High School Athletic Association deemed that an examination of certain variables were sufficient to determine the difference in the educational performance of athletes and non-athletes (Overton, 2001). The Craven County schools deemed that these same variables with minor differences were sufficient to address the problem of practice in the Craven County school system.

Problem of Practice Research

The methodology for this study is similar to the methodology of the Overton (2001) study; however, the problem of practice element in Craven County has also influenced the methodology. Wergin (2011) recommended that the EdD program be reorganized to include the following problem of practice principles. First, education is important as a tool for social change. The function of education is to emancipate, not indoctrinate. Secondly, doctoral expertise for educators is useful for educators with pedagogical responsibilities in a variety of educational settings, not just school settings. The third principle is that the EdD exceeds the boundaries of the master's degree by emphasizing scholarship, not just proficiency in practice. And finally, the EdD is not a modified PhD. The EdD is a degree that has exclusive purposes and outcomes and should culminate in a final assessment that demonstrates practical expertise.

EdD candidates participating in problem of practice research should select a problem from their worksite and explain the challenge and importance of the problem. Next, they should review available literature to seek available solutions to the problem. The researcher should take

action and assess the impact of the action to determine its effectiveness. Finally, the researcher should reflect upon what was learned and devise next steps (Zambo, 2011).

Problem of practice research in an EdD program can be accomplished if the following elements are considered. Existing knowledge must be used to resolve problematic educational issues. Inquiries into practice that are inspired by critique and reflection, should lead to practical research that questions current practice through dialogue, action and reflection. Understanding and knowledge should be applied to problems in education to open and liberate avenues for social change (Wergin, 2011).

Problem of practice research in the EdD program will allow current practitioners in educational leadership to identify problems in education and design solutions for the problems through the dissertation process. Students in education doctorate programs who perform problem of practice research may achieve the goal of influencing effective change to the benefit of education as a whole (Zambo, 2011).

Introduction to Methodology

In the Overton (2001) study, the population included 131 North Carolina high schools. This inquiry examined data from the three high schools in Craven County. Because the population is smaller, methodology had to be adjusted to ensure that sufficient data was available and that data was relevant to the era of this study.

In the Overton (2001) study, researchers retrieved information from the Student Information Management System (SIMS). At that time, North Carolina schools utilized the SIMS program to manage student information and data. At the time of this inquiry, North Carolina schools utilized the North Carolina Window of Information for Student Education (NCWISE) program to manage student information and data.

Overton (2001) examined the following variables in regard to the academic performance of athletes and non-athletes: (a) grade point average, (b) English 1 End-of-Course test, (c) Algebra 1 End-of-Course test, (d) attendance rates, (e) discipline referrals (f) dropout rates, and (g) graduation rates. The change from SIMS to NCWISE and the North Carolina ABCs accountability system predicated variation between this study and the Overton (2001) study.

During the 2011-2012 school year, the North Carolina ABCs accountability system assessed Algebra 1, English 1 and Biology. For this reason, the End-of Course test scores from these subjects were considered relevant for this inquiry. The Overton (2001) study did not include Biology scores. In addition, NCWISE records period attendance for high school students as opposed to daily attendance. Subsequently, this inquiry will examine period attendance as opposed to daily attendance.

The Overton (2001) study focused on discipline referrals, but the Craven County inquiry will address the number of days of out-of-school suspension. Discipline referrals vary in regard to school policies and expectations. Out-of-school suspensions involve similar offenses that are monitored by district and state expectations.

In addition, the current graduation cohort in North Carolina is a four year cohort. This inquiry was based on data from the 2011-2012 school year. For this reason, an examination of the four year cohort data was not included.

This inquiry focused on 2011-2012 data from the three Craven County traditional high schools. The data provided for the 2011-2012 year included historical testing data for every band participant and non-band participant who was enrolled in a Craven County High School during 2010-2011. The data from a senior student included scores from every End-of-Course test that

the senior took during high school. Junior students included three years of high school testing data, sophomores included two years of testing data and freshman, one year of data.

Grade point average data and out-of-school suspension data were cumulative as well. Only 2011-2012 data for period attendance was included because attendance information was only accessible for the current year. The dropout inquiry included only one year of dropout data as well, because the dropout rate in North Carolina during 2011-2012 was calculated as an event rate. Only one year of data was used in an event rate calculation.

To clarify, the variables that were used for the Craven County inquiry included the following: (a) grade point average, (b) English 1 End-of-Course proficiency, (c) Algebra I End-of-Course proficiency, (d) Biology End-of-Course proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rate.

Null Hypothesis and Sub Hypotheses

This examination was a comparative analysis of the difference in overall academic performance between band and non-band participants during the 2011-2012 school year. The null hypothesis for this study was as follows: There is no significant difference in the overall academic performance of band and non-band participants.

A null sub hypothesis was established for each variable that was examined including the following:

1. There is no significant difference in the grade point averages of band and non-band participants.
2. There is no significant difference in the English 1 End-of Course proficiency of band and non-band participants.

3. There is no significant difference in the Algebra I End-of Course test proficiency of band and non-band participants.
4. There is no significant difference in the Biology End-of Course test proficiency of band and non-band participants.
5. There is no significant difference in the period attendance of band and non-band participants.
6. There is no significant difference in the number of days of out-of-school suspension assigned to band participants and to non-band participants.
7. There is no significant difference in the dropout rates of band and non-band participants.

The acceptance or rejection of the overall null hypothesis was based on the comparison of the academic achievement of band and non-band participants.

Dependent Measures

Evaluating student academic achievement is subjective by nature. It is nearly impossible to consider all of the variables that contribute to academic learning and the assignment of grades in school courses as different teachers in different schools implement their classroom policies and procedures. The same can be said of evaluating academic achievement among teachers in the same school (Overton, 2001). There are some variables that could not be considered in the study. For example, socioeconomic status data was not available for this inquiry. This study specifically compared the academic achievement for band participants with non-band participants.

The EOC curriculums including English I, Algebra I and Biology were mandated by the state and were identical. Other curricular offerings were similar in the three schools because the schools are all part of the Craven County Schools system. School size did account for slight

curricular differences in regard to the number of available electives and Advanced Placement courses.

During the 2011-2012 school year, there were several different course offerings including marching band, jazz band and various levels of concert or symphonic band. Students who participated in any of these courses during the 2011-2012 school year were considered band participants for the purposes of this study.

Other dependent measures that may have been methodologically problematic in the Overton (2001) study were less problematic in the Craven County inquiry. The Overton study included data from 133 schools in multiple school systems that utilized multiple methods for calculating grade point average, recording attendance, etc. The Craven County study included the three traditional high schools within the county. This was advantageous because Board of Education policy dictated methods for calculating grade point average and for reporting suspension and attendance records. The state provided the processes for computing dropout rates and for determining proficiency for English 1, Algebra I, and Biology End-of-Course measures. The method of collecting data from the three Craven County schools was identical.

Subjects

The subjects for this study included all students in grades nine through twelve who attended one of the three traditional high schools in Craven County, North Carolina during the 2011-2012 school year. The data from 3,908 students were examined for this inquiry.

The three schools involved included Havelock High School, New Bern High School and West Craven High School. Since all three schools were part of the Craven County system, each school had similar expectations and processes and was under the governance of Craven County School Board policy.

Even though the schools share many similarities, the three schools are located in three very distinctive communities and each school has distinctive characteristics. New Bern High School is the largest school in a community that recently celebrated its 300th anniversary. The town of New Bern has several large industries and is also a waterfront town that benefits from the tourism industry as well. The town has a varied demographic population that includes many upper and upper middle socioeconomic families, in addition to many low socioeconomic families. The demographic population of New Bern High School is similar to the community.

Havelock is a military town that is the home of the Cherry Point Marine Corps Air Station. Havelock High School is directly across the street from the base and has a strong military influence. Havelock is a very diverse school that includes students from around the world. There is a strong contingent of local students combined with a number of military dependents and federally connected students. Many of the military students have experienced world travel and other cultural influences that are typical of transient military families.

West Craven High School is located in Vanceboro, a small rural town in the Western part of the county. One large industry is located near Vanceboro and employs many of the citizens in the western part of the county. Other citizens from the Vanceboro area work in the nearby towns of New Bern or Greenville. West Craven High School is a small town school that has fewer transient students than the other two schools in the county. Many of the West Craven High School faculty members graduated from West Craven High School.

The enrollments of Havelock High School, New Bern High School and West Craven High School during the 2011-2012 school year and the number of band participants are indicated in Table 3.

The acceptance or rejection of the overall null hypothesis included data for overall band and non-band participants. Because the Craven County inquiry was a problem of practice study, data from other subgroups was not considered.

Data for the Overton (2001) study separated athletes and non-athletes. The Craven County inquiry divided students into two categories, band and non-band participants. Any student who participated in a semester-long band class during the 2011-2012 school year was considered a band participant. If students participated in multiple band classes during the year, i.e., Marching Band, Symphonic Band, Jazz Band, etcetera, they were only considered once for the purposes of this study. Conversely, if a student only participated in a band class for one of the two semesters during the 2010-2011 school year, they were still considered a band participant. Students who did not participate in a band class during the 2010-2011 school year were considered non-band participants for the purposes of this study.

Instrumentation

As formerly mentioned, this study is a replication of the Overton (2001) study that compared the academic performance of athletes and non-athletes. Overton extracted data from the Student Information Management System (SIMS), the current computer system in 2001. The Craven County study focused on the three traditional high schools in Craven County. The student information system used during the 2011-2012 school year was the North Carolina Window of Information for Student Education (NCWISE).

The principal from each of the Craven County high schools approved the use of data from their school for the purposes of this study. After approval was obtained, data managers from the three high schools provided NCWISE data for each of the 3828 students who attended a

Table 3

Number of Students in Participating Schools

School Name	Total Number of Students	Band Participants
Havelock High School	1,126	166
New Bern High School	1,707	80
West Craven High School	995	112

Craven County traditional high school during the 2011-2012 school year. All contributing data for the study was categorized by pupil numbers only. At no time were student names made available to the researcher. Pupil numbers were used to organize data and were not published or shared with any entity other than the researcher.

Grade point average from the three high schools was based on a 4.0 scale. An overall percentage of the grade point average of band and non-band participants was calculated. Grade point average data was entered into the IBM SPSS Statistics 20 program and data for band and non-band participants were tested. For period attendance, the total number of class periods missed by student was calculated for band and non-band participants. Similarly, the number of days of out-of-school suspension was calculated for band and non-band participants. The data was entered into the SPSS program and was tested. Demographic data were not considered.

For the examination of English 1 End-of-Course proficiency, Algebra I End-of-Course proficiency, and Biology End-of-Course proficiency, proficiency of band and non-band participants was calculated. During 2011-2012, proficiency as defined by the North Carolina Department of Instruction was the focus of the End-of-Course testing program. Students were considered not-proficient if they achieved a level one or level two on the various tests. Students were considered proficient if they achieved a level three or level four on the test.

A listing of the End-of-Course Tests 2010-2011 Achievement Level Ranges is provided in Table 4 ("Accountability services division,"). Data regarding proficiency was entered into the SPSS program and was tested comparing band and non-band participants.

Dropout out information was collected from data managers and was tested in the SPSS program comparing the number of band participant dropouts to non-band participant dropouts.

Procedure

At the advent of statewide transition to the North Carolina Essential Standards and the Common Core curriculums, Dr. Lane Mills, Superintendent of the Craven County Schools became concerned that principals were creating transitional and remedial courses to meet the new requirements. His concern was that music programs would suffer from scheduling conflicts because remedial and transitional courses could limit opportunities for students to take music courses, especially lower performing students. He was also concerned that the new courses would create scheduling conflicts with the music courses.

As a former high school band participant, Dr. Mills believed that participation in band programs generated many positive outcomes for students. According to Dr. Mills, creating transitional or remedial courses that diminished enrollment in music programs could lead to a problem of practice for the Craven County Schools.

Dr. Mills engaged the principal of Havelock High School who was interested in researching the impact of band participation on academic performance to research the issue and make recommendations to the principals of the Craven County high schools. A decision was made by the researcher to replicate the Overton (2001) study that examined the impact of athletic participation on academic achievement. It was decided that the structure and methodology of the Overton study would be relevant and useful for determining the impact of band participation on academic achievement in Craven County.

The next step was to enlist the support of the high school principals. The principals agreed to provide support and necessary data for the study. The data managers from each school provided data from NCWISE in an Excel database format. Databases were created for band and non-band participants. In order to keep student information confidential, student numbers were provided to differentiate between band and non-band participants but no student

Table 4

End-of-Course Tests 2010-2011 Achievement Level Ranges

Course	Level I	Level II	Level III	Level IV
English 1	131-137	138-145	146-156	147-179
Algebra 1	125-139	140-147	148-157	158-190
Biology	121-137	138-146	147-158	159-179

names were provided. The student numbers were deleted after statistical tests were completed and were not included in any written reports or shared with any stakeholders in the study.

Data Treatment

Data were collected from the three Craven County high schools and entered into a database. Data were then subjected to statistical testing. End-of-Course test proficiency data and dropout data were subjected to Fisher's exact test. Grade point average, period attendance and the number of days of out-of-school suspension were subjected to Mann-Whitney U tests. The purpose of these tests was to determine statistically significant differences in grade point averages and End-of-Course test scores for English 1, Algebra 1 and Biology between band and non-band participants. Differences between band and non-band participants were also considered in regard to period attendance, the number of days of out-of-school suspension, and dropout rates.

The Fisher's exact test was applied as the statistic of analysis for examining End-of-Course data and dropout data. The Fisher's exact test calculated the probability of getting a 2x2 table as great or as greater than the observed table (Sheskin, 2004). The formula for the Fisher's exact test (Sheskin, 2004, p. 506) is as follows:

2x2 Frequency Table

a	b
c	d

$$P = \frac{(a+c)! (b+d)! (a+b)! (c+d)!}{n! a! b! c! d!}$$

$$n! a! b! c! d!$$

where

P is the probability of obtaining the observed frequencies

a, b, c, d are the categorical frequencies observed.

N is the sample size

In order to perform a Fisher's exact test, variables were combined into proficient and non-proficient categories for End-of-Course data and dropout or non-dropout categories for dropout data. Proficiency consisted of student achievement levels of III and IV, while non-proficiency consisted of student achievement levels of I and II. End-of Course data and dropout data compared band and non-band participants.

Separate Fisher's exact tests were performed for:

- English End-of Course tests;
- Algebra 1 End-of-Course tests;
- Biology End-of-Course tests;
- Dropout rates.

For each Fisher's exact test conducted in this study, the level of significance was set at .05, or $p < .05$. Significant differences revealed by the Fisher's exact test would support the notion that student academic achievement may be effected by band participation as opposed to non-band participation and by gender or ethnicity. All statistical analyses were performed using the IBM SPSS Statistics 20 quantitative software package.

To address grade point average, period attendance and the number of days of out-of-school suspension data, the researcher conducted Mann-Whitney U tests that compared the medians of band participants to non-band participants in order to determine if there was a significant difference between the two groups (Pallant, 2010). The level of significance was set at .05, or $p < .05$.

A Mann-Whitney U test considers differences between two independent groups on a continuous measure. A Mann-Whitney U test is the nonparametric alternative to a t-test for independent samples. Where the t-test compares means, the Mann-Whitney U test compares medians. Scores are converted to continuous ranks and then evaluated to determine if there are significant differences between the groups. In nonparametric tests, the actual distribution of scores does not matter (Pallant, 2010).

Separate Mann-Whitney U tests were performed for:

- Grade Point Average
- The Number of Days of Out-of-School Suspension
- Period Attendance.

All analyses were conducted with IBM SPSS Statistics 20 quantitative software package. Significant differences between the means or medians for each variable would support the notion that student academic achievement may be affected by band participation as opposed to non-band participation in the Craven County Schools.

Summary

The Craven County inquiry comparing the academic achievement of band participants with non-band participants was intended to replicate the Overton (2001) study that compared the academic achievement of athletes with non-athletes. Following the development of the null hypothesis, data managers provided data from the three schools. These data were included in a database so they could be examined for this study. Data were provided from Havelock High School, New Bern High School, and West Craven High School for all students in grade 9-12. Data from seven variables that included information about band and non-band participants were

generated from the North Carolina Window of Information for Student Education (NCWISE). Data from band and non-band participants were compared.

Three thousand nine hundred and eight high school students from the three traditional high schools in Craven County were included in this study. Overton (2001) utilized paired t-tests to determine statistically significant differences in the study of athletes and non-athletes. This study utilized Fisher's exact tests for English 1 End-of-Course test data, Algebra 1 End-of-Course test data, Biology End-of-Course test data and dropout data to determine statistically significant differences between band and non-band participants. Mann-Whitney U tests were used to compare the medians of band and non-band participants in regard to grade point average, period attendance, and the number of days of out-of-school suspension.

CHAPTER 4: ANALYSIS OF THE DATA

This study was a problem of practice research for the Craven County schools system. Quantitative data was compiled for the following variables: (a) grade point average, (b) English 1 End-of-Course proficiency, (c) Algebra I End-of-Course proficiency, (d) Biology End-of-Course proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rate. These data were acquired from each of the three traditional high schools in Craven County and were subjected to the Statistical Package for the Social Sciences (SPSS) program for statistical analysis. Overton (2001) concluded that there were significant differences in the academic achievement of athletes and non-athletes. In this study, analysis for six out of seven variables demonstrated statistically significant differences in the academic achievement of high school band and non-band participants in the traditional high schools of Craven County during the 2011-2012 school years.

In order to perform statistical comparisons between band and non-band participants, the Fisher's exact test was applied as the statistic of analysis for examining English 1 End-of-Course data, Algebra 1 End-of-Course data, Biology End-of-Course data and dropout data. The Mann-Whitney U-test was applied to address grade point average data, period attendance data and the number of days of out-of-school suspension data.

Description of Participants

The participants for this study included all students in grades nine through twelve who attended one of the three traditional high schools in Craven County, North Carolina during the 2011-2012 school year. The data from 3908 students were examined for this inquiry.

Description of Student Data

As mentioned in Chapter 3, this inquiry focused on 2011-2012 data from the three traditional high schools in Craven County. The data provided for the 2011-2012 year included

historical testing data for every band participant and non-band participant who was enrolled in a Craven County high school during 2010-2011. The data from a senior student included scores from every End-of-Course test that the senior took during high school. Junior students included three years of high school testing data; sophomores included two years of testing data; and freshman, one year of data.

The number of students whose scores were included in each statistical test varied for several reasons. It should be noted that all students in grades 9-12 were observed for the study. Not every student had a score for Biology since the test was given in either 10th or 11th grade in Craven County. Also it should be noted that the Cherry Point Marine Corps Air Station is located in Craven County. For this reason, student populations were transient at all three of the traditional high schools. Students who completed Algebra 1 or English 1 at a high school outside of North Carolina were not required to take the English 1 or Algebra 1 End-of-Course tests.

Data Analysis by Variable

Contingency tables were created for the English 1 End-of-Course test, the Algebra 1 End-of-Course test, the Biology End-of Course test and the dropout rate to display the results of the Fisher's exact test performed for each variable. Each table includes information about proficiency in the selected variable, the percentage of proficiency and summary information that shows the total number of cases observed and the p-value for the test. The presentation of the tables is followed by a description of the presented information.

Contingency tables were likewise created to show the results of the Mann-Whitney U test performed for each of the following variables: grade point average, period attendance and the number of days of out-of-school suspension. Each table includes information for each variable including mean data, median data and summary data, including the number of cases observed,

the Z-score and the p-value for the test. The median was observed in addition to the mean to determine if extreme values affected the outcomes. The presentation of each table is followed by a description of the information presented.

Grade Point Average

The Grade Point Average (GPA) data shown in Tables 5 are based on a 4.0 scale. Table 5 portrays the number of band participants and the number of non-band participants whose grade point averages were examined for this study, mean GPA for each group and the difference between the two. There were 356 band participants and 3472 non-band participants observed for this variable. The mean GPA for band participants was 3.42 and the mean GPA for non-band participants was 2.65. The mean GPA for band participants was 0.77 points higher than the GPA of non-band participants.

Table 5 also portrays the median GPA for each group and the difference between the two. Median information was based on the 356 band participants and 3472 non-band participants utilized for this variable. The median GPA score for band participants was 3.55 and the median GPA score for non-band participants was 2.71. The median GPA for band participants was 0.84 points higher than non-band participants.

Finally, Table 5 shows summary information of the Mann-Whitney U test for grade point average. There were a total of 3828 students observed for this variable. The Z-score for this statistical test was -13.928 and the p-value was .000.

English 1 Proficiency

Table 6 portrays the number of band and non-band participants who were proficient on the English 1 End-of-Course test and the number of band and non-band participants who were non-proficient on the English 1 End-of-Course test. This table correspondingly includes the total

Table 5

Results of Mann-Whitney U Test for Grade Point Average

Variable	n	Mean GPA	Mean Difference
Band Participants	356	3.42	0.77
Non-Band Participants	3,472	2.65	
		Median GPA	Median Difference
Band Participants	356	3.55	0.84
Non-Band Participants	3,472	2.71	
Summary		Z-score	<i>p</i>
Band and non-band participants	3,828	-13.928	.000

Note. $p < .05$.

Table 6

Results for Fisher's exact Test for English I Proficiency

Variable	Proficient	Non-Proficient	Total
Band Participants	141	3	144
Non-Band Participants	3167	260	3427
Total	3308	263	3571
	Proficient %	Non-Proficient%	Difference
Band Participant	97.9%	2.1%	5.5%
Non-Band Participant	92.4%	7.6%	
Summary	<i>n</i>		<i>p</i>
Band and non-band participants	3571		.000

Note. $p < .05$.

number for each group. Of the 144 band participants who were observed in regard to English 1 proficiency, 141 band participants scored proficient and 3 scored non-proficient. There were 3,571 non-band participants who were observed for English 1 proficiency, and 3,167 non-band participants scored proficient while 260 scored non-proficient.

Table 6 also depicts the percentage of band participants and the percentage of non-band participants who were proficient on the English 1 End-of-Course test. It also shows the percentage of band and non-band participants who were non-proficient on the English 1 End-of-Course test. Of the 144 band participants who were observed for English 1 proficiency, 97.9% of band participants scored proficient and 2.1% scored non-proficient. Of the 3,571 non-band participants who were observed for English 1 proficiency, 92.4% scored proficient while 7.6% scored non-proficient. The percentage of proficiency for band participants was 5.5% higher than non-band participants.

Finally, Table 6 includes a summary of information from the Fisher's exact test for English 1 proficiency. There were a total of 3,571 students observed for this variable. The p-value for the English 1 variable was .000.

Algebra 1 Proficiency

Table 7 portrays the number of band and non-band participants who were proficient on the Algebra 1 End-of-Course test. Table 7 also shows the number of band and non-band participants who were non-proficient on the Algebra 1 End-of-Course test. This table

This table correspondingly includes the total number for each group. Of the 166 band participants who were observed in regard to Algebra 1 proficiency, 161 band participants correspondingly includes the total number for each group. Of the 166 band participants scored proficient and 5 scored non-proficient. There were 3,229 non-band participants who were

Table 7

Results for Fisher's Exact Test for Algebra I Proficiency

Variable	Proficient	Non-Proficient	Total
Band Participants	161	5	166
Non-Band Participants	2,879	350	3,229
Total	3,040	355	3,395
	Proficient%	Non-Proficient%	Difference
Band Participant	97.0%	3.0%	7.8%
Non-Band Participant	89.2%	10.8%	
Summary	<i>n</i>		<i>p</i>
Band and non-band participants	3,395		.000

Note. $p < .05$.

observed for Algebra 1 proficiency, and 2,879 non-band participants scored proficient while 350 scored non-proficient.

Table 7 also shows the percentage of band and non-band participants who were proficient on the Algebra 1 End-of-Course test. It also shows the percentage of band and non-band participants who were non-proficient on the Algebra 1 End-of-Course test. Of the 166 band participants who were observed for English 1 proficiency, 97.0% of band participants scored proficient and 3.0% scored non-proficient. Of the 3,229 non-band participants who were observed for Algebra 1 proficiency, 89.2% scored proficient while 10.8% scored non-proficient. The percentage of proficiency for band participants was 7.8% higher than non-band participants.

Table 7 finally includes a summary of information from the Fisher's exact test for Algebra 1 proficiency. There were a total of 3,395 students observed for this variable. The p-value for the Algebra 1 variable was .000.

Biology Proficiency

Table 8 portrays the number of band and non-band participants who were proficient on the Biology End-of-Course test. Table 11 also shows the number of band and non-band participants who were non-proficient on the Biology End-of-Course test. This table correspondingly includes the total number for each group. Of the 90 band participants who were observed in regard to Biology proficiency, 88 band participants scored proficient and 2 scored non-proficient. There were 1,806 non-band participants who were observed for Biology proficiency, and 1,680 non-band participants scored proficient while 126 scored non-proficient.

Table 8 also shows the percentage of band and non-band participants who were proficient on the Biology End-of-Course test. It also shows the percentage of band and non-band participants who were non-proficient on the Biology End-of-Course test. Of the 90 band

Table 8

Results for Fisher's Exact Test for Biology Proficiency

Variable	Proficient	Non-Proficient	Total
Band Participants	88	2	90
Non-Band Participants	1,680	126	1,806
Total	1,768	128	1,896
	Proficient%	Non-Proficient%	Difference
Band Participant	97.8%	2.2%	4.8%
Non-Band Participant	93.0%	7.0%	
Summary	<i>n</i>		<i>p</i>
Band and non-band participants	1,896		.085

Note. $p < .05$.

participants who were observed for Biology proficiency, 97.8% of band participants scored proficient and 2.2% scored non-proficient. Of the 1,806 non-band participants who were observed for Biology proficiency, 93.0% scored proficient while 7.0% scored non-proficient. The percentage of proficiency for band participants was 4.8% higher than non-band participants.

Table 8 also includes a summary of information from the Fisher's exact test for Biology proficiency. There were a total of 1,896 students observed for this variable. The p-value for the Biology variable was .085.

Period Attendance

Table 9 portrays the number of band participants and the number of non-band participants whose period attendance was examined for this study, mean period attendance for each group and the difference between the two. The period attendance data shows the number of class periods missed during the 2011-2012 school year. There were 356 band participants and 3,476 non-band participants utilized for this variable. The mean periods absent for band participants were 32.56 periods and the mean periods absent for non-band participants were 47.88. The mean number of class periods missed by band participants was 15.36 periods fewer than the mean number of class periods missed by non-band participants.

Table 9 also shows median period attendance for each group and the difference between the two. There were 356 band participants and 3,472 non-band participants utilized for this variable. The median periods absent for band participants were 26 periods and the median periods absent for non-band participants were 36 periods. The median periods absent for band participants were 10 periods less than non-band participants.

Table 9

Results of Mann-Whitney U Test for Period Attendance

Variable	n	Mean Periods Absent	Mean Difference
Band Participants	356	32.52 periods absent	15.36 periods absent
Non-Band Participants	3,476	47.88 periods absent	
		Median Periods Absent	Median Difference
Band Participants	356	26 periods absent	10 periods absent
Non-Band Participants	3,476	36 periods absent	
Summary		Z-score	p
Band and non-band participants	3,832	-6.593	.000

Note. $p < .05$.

Table 9 finally depicts summary information of the Mann-Whitney U test for period attendance. There were a total of 3,832 students observed for this variable. The Z-score for this statistical test was -6.593 and the p-value was .000.

Out-of-School Suspension

Table 10 portrays the number of band participants and the number of non-band participants whose out-of-school suspension data was examined for this study, mean out-of school suspension data for each group and the difference between the two. The out-of school suspension data shows the number of days that students were suspended out of school during the 2011-2012 school year. There were 356 band participants and 3,481 non-band participants utilized for this variable. The mean number of out-of school suspension days for band participants was 1.17 days and the mean number of out-of school suspension days for non-band participants was 4.76 days. The mean number of out-of school suspension days for band participants was 3.59 days less than the mean number of out-of school suspension days for non-band participants.

Table 10 also shows the number of band participants and the number of non-band participants whose out-of-school suspension data was examined for this study, median period attendance for each group and the difference between the two. There were 356 band participants and 3,481 non-band participants utilized for this variable. The median number of out-of school suspension days for band participants was 0.0 days and the median number of out-of school suspension days for non-band participants was 0.0. The median number of out-of school suspension days for band participants were the same as the number of out-of school suspension days for non-band participants.

Table 10

Results of Mann-Whitney U Test for Out-of-School Suspension

Variable	n	Mean OSS	Mean Difference
Band Participants	356	1.17 days	3.59 days
Non-Band Participants	3,481	4.76 days	
	n	Median OSS	Median Difference
Band Participants	356	.00	.00
Non-Band Participants	3,481	.00	
Summary		Z-score	<i>p</i>
Band and non-band participants	3,837	-8.397	.000

Note. $p < .05$.

Table 10 concludes with summary information of the Mann-Whitney U test for grade point average. There were a total of 3,837 students observed for this variable. The Z-score for this statistical test was -8.397 and the p-value was .000.

Dropout Rate

Table 11 shows the number of dropouts and non-dropouts for band and non-band participants. This table correspondingly includes the total number for each group. None of the 356 band participants who were observed for this study dropped out of school during the 2011-2012 school year. Of the 3,552 non-band participants, 93 dropped of school during the same year. A total of 3,908 students, including the students who dropped out of school were observed for this variable.

Table 11 further shows the percentage of band participants and the percentage of non-band participants who dropped out of school during the 2011-2012 school year. There were no band participants who dropped out of school during the observed year; however, 2.6% of non-band participants dropped out of school.

Table 11 finally depicts a summary of information from the Fisher's exact test for dropout rate. There were a total of 3,908 students observed for this variable. The p-value for the dropout rate variable was .00.

Discussion of Data Analysis

The Craven County study comparing band and non-band participants revealed that the overall academic performance of band participants exceeded the overall academic performance of non-band participants. The data supports that differences between band and non-band participants were statistically significant in six of the seven variables that were observed for this inquiry.

Table 11

Results for Fisher's Exact Test for Dropout Rates

Variable	Dropout	Non-Dropout	Total
Band Participants	0	356	356
Non-Band Participants	93	3,459	3,552
Total	93	3,815	3,908
	Dropout %	Non-Dropout %	Difference
Band Participants	0%	100%	2.6%
Non-Band Participants	2.6%	97.4%	
Summary	<i>n</i>		<i>p</i>
Band and non-band participants	3,908		.000

Note. $p < .05$.

The mean grade point average (GPA) was significantly higher for band participants when compared to non-band participants. The mean GPA for band participants was 3.42 and the mean GPA for non-band participants was 2.65. The GPA for band participants was 0.77 points higher than the GPA of non-band participants. In addition, the median GPA for band participants was 0.84 points higher than non-band participants.

A comparison of mean proficiency for the English 1 End-of-Course test indicated a statistically significant difference between band and non-band participants. Among band participants, 97.9% were proficient on the English 1 End-of Course test while 92.4 % of non-band participants were proficient. Band participant proficiency was 5.5% higher than the proficiency of non-band participants.

Proficiency comparisons for the Algebra 1 End-of Course test revealed a significant difference between band and non-band participants. Among band participants, 97% scored at a proficient level while 89.2% of non-band participants were proficient. Band participant proficiency was 7.8% higher than the proficiency of non-band participants.

Only 2 of the 90 observed band participants failed to score at a proficient level on the Biology End-of-Course test. Of the 1,806 non-band participants who were observed for this variable, 126 failed to score at a proficient level. Even though band participants scored at a proficiency level that was 4.8% higher than non-band participants, they failed to engender a significant difference between the two groups. The Biology End-of-Course test was the only variable in the Craven County study where band participants were not significantly different than the non-band participants. The p-value for the Fisher's exact test for Biology proficiency was .085.

A comparison of period attendance means also indicates a significant difference between band and non-band participants. Band participants were absent an average of 32.52 class periods during the 2011-2012 school year. The mean for period attendance for non-band participants was 47.88 periods. Non-band participants were absent an average of 15.36 more class periods than non-band participants. Observing the median for period attendance shows band participants absent for 26 class periods while non-band participants were absent 36 class periods. According to the median scores for each group, band participants were absent 10 periods less than non-band participants.

The mean number of days of out-of-school suspension for band participants was 1.17 days and 4.76 days for non-band participants. The difference of 3.59 days of out-of school suspension was found to be statistically different. The data supports the conclusion that band participants are significantly less likely to be suspended out of school than non-band participants.

Not a single student who participated in a Craven County band class during the 2011-2012 school year dropped out of school. There were 93 non-band participants who dropped out during the same year. The difference of 2.6% between the two groups was statistically significant.

The Overton (2001) study concluded that students who participated in interscholastic athletics outperformed students who did not participate in athletics. He recommended that similar research be performed that compared the academic achievement of participants in other extracurricular activities with non-participants. The Craven County inquiry was designed to compare the academic achievement of band participants with non-band participants.

The null hypothesis for the Craven County study, that there is no significant difference in the overall academic performance of band and non-band participants, was rejected. With the

exception of the Biology End-of-Course test data, the analysis of the statistical data of the variables supports this rejection.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine if the students in Craven County who participated in a high school band program experienced a higher level of academic achievement than students who did not participate in band. It was the intention of the study to address the perceived problem of practice of undervaluing high school music instruction in favor of transitional courses for tested subjects during times of curricular change and financial crisis. It was also the intention of the study to replicate the structure and methods of the Overton (2001) study that concluded that students who participate in athletics experience higher academic achievement than non-participants.

The three Craven County traditional high schools were utilized for this study. Data was provided for all students in grades 9-12 from Havelock High School, New Bern High School and West Craven High School for the 2011-2012 school year. For the purposes of this study, students who participated in one or more band classes during the 2011-2012 school year were considered band participants. Students who did not take a band class during the same year were considered non-band participants.

Band and non-band participants were compared according to the following variables (a) grade point average, (b) English 1 End-of-Course proficiency, (c) Algebra I End-of-Course proficiency, (d) Biology End-of-Course proficiency, (e) period attendance, (f) number of days of out-of-school suspension, and (g) dropout rate.

Data was collected from data managers at each of the high schools and entered into databases. Non-parametric tests were performed because the study was commissioned by Craven County Schools and generalization to other populations was not an intended purpose of the study. The level of significance was established at the level of $p < .05$.

Fisher's exact test was utilized to analyze data for English 1 End-of-Course proficiency, Algebra I End-of-Course proficiency, Biology End-of-Course proficiency, and dropout rate. Mann-Whitney U tests were used to analyze data for grade point average, period attendance and the number of days of out-of-school suspension.

Conclusions

According to Parson (2009), there is a positive relationship between academic success and enrollment in arts courses. Additionally, Catterall (1997) concluded that students involved in the arts exceed the academic achievements of those who were not involved, regardless of socioeconomic status. According to Leenman (2010), music participation is a key component in raising test scores and preparing students for the 21st century.

This study added to available research about music participation by concluding that Craven County students who participated in a band class experienced higher academic achievement than non-band participants. This finding supports the results of similar studies about participation in arts programs found in current literature and parallels the findings of the Overton (2001) study which concluded that students who participate in athletics academically outperform non-participants.

The Olson (2009) study of college freshman at Whitworth University in Spokane, Washington concluded that students who remained in music classes in high school had higher grade point averages when compared to non-music participants. This study of college students further concluded that those who continued music instruction while in college excelled at a higher rate than non-music participants. A Nebraska study found that there was a gradual increase in grade point averages as the number of high school music courses increased (Cox & Stephens, 2006).

Statistical results regarding the mean grade point average of participants in the Craven County study showed that band participants experienced a significantly higher GPA than non-band participants. In this study, the GPA of band participants was .77 higher than non-band participants. Band participants averaged a 3.42 GPA compared to 2.65 for non-band participants.

In a recent Maryland study, researchers discovered that high school students who were enrolled in instrumental music classes scored significantly higher on the reading and math portions of the Maryland High School Assessment (Davenport, 2010). In a Union University study of two school systems, both systems agreed that the study of music had a positive impact on their schools (Deere, 2010).

In the Craven County study, band participants significantly outperformed non-band participants in English 1 and Algebra 1. In regard to English 1 proficiency, band participants scored significantly higher than non-band participants. Band participants were 97.9% proficient and exceeded the proficiency of non-band participants by 5.5%.

Algebra 1 results showed a 7.8% proficiency advantage for band participants. Band participants were 97% proficient which was significantly higher than the 89.2% proficiency experienced by non-band students.

In Biology, band participants were 4.8% more proficient than non-band participants, but the difference between the two groups was not statistically significant. This is the only variable from this study for which the difference between the two groups was not statistically significant. Band participants were 97.8% proficient compared to 93% proficient for non-band participants.

There is a dearth of comparable literature in regard to the relationship between band and non-band participation and Biology End-of-Course tests. The lack of significant differences may be attributed to smaller sample sizes, and the numerical similarity of the Biology scores of band

and non-band participants. Additional research is needed to further establish baseline information for the Biology variable.

Both Whitley (1995) and Overton (2001) concluded that athletes experienced higher daily attendance than non-athletes; however, there is a privation of comparable literature in regard to the specific relationship of band and non-band participation and period attendance. Davenport (2010) concluded that band participants experienced higher daily attendance rates than non-participants. In the Craven County study, period attendance rates were significantly higher for band participants when compared to non-band participants. Band participants missed an average of 15.36 fewer class periods than non-band participants.

Adolescents involved in the performing arts are less frequently engaged in risky behaviors than those who are not involved in the performing arts (Eccles et al., 2003). Also, according to McNeal (1995), participation in the fine arts encourages an environment that is more cooperative. Additionally, in a Nebraska study, students who participated in band had fewer disciplinary referrals than non-participants (Dick, 2010).

In Craven County, band participants had a significantly lower number of days of out-of-school suspension. The mean days of out-of-school suspension for non-band participants was 4.76 while the mean for band participants was 1.17. Band participants averaged 3.59 days of out-of-school suspension fewer when compared to non-band participants. These data support the conclusion that Craven County band participants are less likely to be suspended out-of-school than non-band participants.

Participation in extracurricular activities including band encourages the growth of support systems and assists students with the development of individual goals while helping them identify and define personal interests (Martin et al., 2002). Participation in the fine arts may

affect student decisions in regard to dropping out of school on an individual basis. Fine arts activities help students attain cultural capital and allow them access to the more “elite” stratum of the school population (McNeal, 1995). Participation in the arts provides students with access to additional key adults who can provide guidance and support in a variety of spheres (Eccles et al., 2003). Research supports the notion that participation in the arts may increase engagement for students (Caldwell & Vaughn, 2011). Students who are engaged in school will become academically successful and are less likely to dropout (Archambault et al., 2009).

The Craven County study adds to available literature that supports the notion that band participants are less likely to drop out of high school. No Craven County band participants dropped out of school during the observed school year compared to 2.8% of non-band participants. According to the literature, students who participate in a band class are more engaged in school, enjoy increased adult support and are less likely to drop out of school. The difference between Craven County band and non-band participants regarding dropout was statistically significant and supports previous research that concludes that participation in band encourages students to stay in school.

Band participants outperformed non-band participants in all seven of the statistical tests completed for Craven County schools. The difference was statistically significant for six out of seven of the variables. As stated in Chapter 4, the null hypothesis that there is no significant difference in the overall academic performance of band and non-band participants was rejected.

Recommendations

The implementation of the Common Core Standards and the North Carolina Essential Standards combined with new school accountability measures have prompted principals in Craven County and other counties to create courses and programs intended to boost scores in core subjects and in other tested areas. These courses conflicted with band and other

music courses and may have been given a higher priority by principals who wished to have high standardized test scores. The creation of transitional and remedial courses that conflicted with band and other music courses was viewed as a problem of practice in the Craven County schools.

Based on the results of this study, recommendations are provided for students, parents, principals, the Craven County Board of Education and other policy makers and finally, researchers who may be interested in studying the relationship between band and music participation and other academic variables.

This study combined with available research supports the notion that high school band participation is beneficial for high school students. It is recommended that high school students take band classes throughout high school and that they continue music instruction during post-secondary academic pursuits. This research indicates that participation in band classes may lead to higher academic performance and attendance and fewer discipline incidents. Participation in band may also increase student engagement in a manner that reduces the dropout rate. In addition, students who continue music participation in college continue to excel academically at a higher rate than non-participants (Olson, 2009).

The academic benefits of participation in band should provide parents with motivation to support the participation of their children. It is recommended that parents encourage their children to take band classes throughout middle and high school and to continue music instruction in college. Parental encouragement and support of participation in band will be beneficial for band programs and for their children. Parental influence that supports and improves band programs may lead to higher test scores, better attendance, fewer discipline issues and lower dropout rates for their children and for other children in their schools.

Principals should acknowledge the results of this study that indicate that participation in a band class or program may result in higher academic achievement for band participants when compared to non-band participants. Supporting band participation may boost academic achievement in multiple subjects and may improve attendance while reducing suspensions and dropouts.

It is recommended that principals make band and other music classes a priority when creating the master schedules for their schools. It is further recommended that principals become personally involved in the master scheduling process with the goal of supporting band and other music classes on the same level as core courses. This study, combined with available literature demonstrates that band participation may provide benefits for students in academic courses.

Creating a master schedule that benefits band courses should be a priority for the principal. Assistant principals, counselors and others who assist with the development of the master schedule should be made aware of this priority. When creating master schedules, conflicts with transitional and advanced placement courses that decrease music participation should be avoided. Specifically, principals should begin the master scheduling process by scheduling band courses during the class period that makes the band class most accessible for students interested in taking a band course.

Multiple sections of advanced placement courses, honors courses and other courses that may conflict with band enrollment should be offered so that conflicts may be minimized. These courses should be offered during different class periods each semester to further minimize conflicts with band courses. The academic benefits of band participation are confirmed by available empirical research. For this reason, the creation of transitional courses should also be limited if they conflict with band courses.

It is also recommended that principals support band and other music courses financially. While band programs and band booster organizations are usually very adept at raising money, band and other music classes should be allotted school instructional funds to purchase music, instructional materials and equipment. Principals should allot funds for band courses that are commensurate with funds allotted for core courses.

It is understood that adhering to these recommendations for principals may complicate master scheduling and budgeting processes; however, the benefit of band participation is supported by the Craven County problem of practice research and by available literature. In order to benefit academic performance, improve attendance, reduce discipline problems and lower the dropout rate, all principals in Craven County are encouraged to increase and maintain support for band and other music programs in their schools.

The results from the Craven County study, combined with the results of the Overton (2001) study provide data that may be used by the board of education to justify current and increased board support for music programs and athletics. The results from this study will provide relevant data that may legitimize the board's support of music programs.

It is recommended that the Craven County Board of Education increase and maintain financial and logistical support for band and other music programs in the Craven County Schools. It is further recommended that the Craven County Board of Education as well as other North Carolina policy makers use the results from this study to justify increased financial and logistical support for band programs and other music programs.

It is further recommended that the Craven County Board of Education and other policy makers encourage principals to protect the class time that is scheduled for music instruction. The use of elementary and middle school music class time to remediate students in non-music

subjects in preparation for standardized tests should be discouraged. This would allow students at all levels to fully experience the benefits of participation in music classes. Supporting music programs in elementary and middle schools may lead to higher participation in high school band programs. Based on the findings of this study, participation in band class may ultimately lead to higher English and Algebra test scores, increased attendance, fewer discipline issues and diminished dropout rates.

This study was intended to compare the academic achievement of band and non-band participants. The results of the study demonstrated that Craven County band participants experienced significantly higher academic achievement than non-band participants.

The results of this study may influence additional research in the future. It is recommended that these results be used as a baseline to encourage researchers to further explore the relationship between band participation and academic achievement.

Future studies could attempt to determine why band participants experience higher academic achievement than non-band participants. Specific variables, i.e. socioeconomic status, ethnicity, etcetera, could be investigated to determine causal effects for the increased achievement among band participants. Future researchers could explore additional variables that may be influenced by band participation, i.e. personal discipline, the benefits of individual and group goal focus and attainment, the ability to work with others in a group setting, etcetera.

Exposure to music and musical instruction leads to augmented brain activity and benefits and increases a child's ability to perform certain academic tasks (Yoon, 2000). It is recommended that researchers further examine the relationship between music instruction and increased academic ability.

Another possible focus for future research would be the comparison of academic achievement of participants of other music courses such as chorus or orchestra classes to the academic achievement of non-participants. Results from similar studies that compare the academic achievement of students who participate in non-band music courses to all students would add to the body of research examining the impact of music education in public schools.

Other research questions that may add depth to related literature could include: Does participation in a large band program influence academic achievement differently than participation in a small band program? Does participation in small instrumental ensembles impact academic achievement in core courses? What traits of individual music teachers influence the academic performance of music students i.e. personality type, education, performance experiences, ability to play multiple instruments, years of experience, etcetera? Another possible research question would be, when during a K-12 education, should music instruction begin to maximize academic benefits for high school students?

Finally, it is recommended that the results of this study be shared with policy makers, administrators, music teachers, parents, students and other stakeholders to encourage support and participation in music and the arts. It is further recommended that researchers replicate this study in other school districts, in other regions of North Carolina and in other states. Analogous results from comparable studies would provide relevant baseline literature that may encourage additional study about the influence of band participation or music instruction on non-music academic variables. A compilation of results from similar studies combined with the results from the Craven County study would heighten acceptability of the conclusions concerning the academic achievement of band participants when compared to non-band participants.

REFERENCES

- Archambault, I., Janosz, M., Morizot, J., & Pagani, L. (2009). Adolescent behavioral, affective, and cognitive engagement in school: Relationship to dropout. *Journal of School Health*, 79(9), 408-415.
- Bryant-Jones, M., Shimmins, K. J., & Vega, J. D. (2003, May 1). Increasing math achievement through use of music.
- Caldwell, B., & Vaughan, T. (2011). *Transforming education through the Arts*. Routledge, Taylor & Francis Group.
- Caro, D. H. (2009). Socio-economic status and academic achievement trajectories from childhood to adolescence. *Canadian Journal of Education*, 32(3), 558-590.
- Catterall, J. S. (1997). Arts benefits don't depend on economic status. *Teaching Music*, 5(2), 10.
- Catterall, J. S., & National Endowment for the Arts. (2012). The arts and achievement in at-risk youth: Findings from four longitudinal studies. Research Report #55. National Endowment for the Arts.
- Common core state and NC essential standards. (2010, June 2). Retrieved from <http://www.dpi.state.nc/acre/history/?&print=true>
- Cox, H. A., & Stephens, L. J. (2006). The effect of music participation on mathematical achievement and overall academic achievement of high school students. *International Journal of Mathematical Education in Science & Technology*, 37(7), 757-763.
- Davenport, K. O. (2010, January 1). The effects of participation in school instrumental music programs on student academic achievement and school attendance. ProQuest LLC.
- Deere, K. (2010, January 1). The impact of music education on academic achievement in reading and math. ProQuest LLC.

- Dick, A. D. (2010, January 1). The relationship of participation in extracurricular activities to student achievement, student attendance, and student behavior in a Nebraska school District. ProQuest LLC.
- Dryden, S. (1992). The impact of instrumental music instruction on the academic achievement of fifth grade students.
- Dwyer, M., & President's Committee, (2011). Re-investing in arts education: Winning America's future through creative schools. *Education Digest: Essential Readings Condensed for Quick Review*, 77(4), 29-35.
- Eccles, J., Barber, B., Stone, M., & Hunt, J. (2003). Extracurricular activities and adolescent development. *Journal of Social Issues*, 59(4), 865-889.
- Feldman, A. F., & Matjasko, J. L. (2005). The role of school-based extracurricular activities in adolescent development: A comprehensive review and future directions. *Review of Educational Research*, 75(2), 159-210.
- Fitzpatrick, J. L., Sanders, J. R., & Worthen, B. R. (2012). *Program evaluation, alternative approaches and practical guidelines* (4th ed.), p. 4. Boston: Prentice Hall.
- Gacherieu, D. R. (2004, August 1). Understanding how participation in an after school arts program affects students in their general education classroom. Online Submission.
- Gadberry, D. (2010). Music participation and academic success. *Kodaly Envoy*, 36(4), 13-14.
- Gholson, R. E. (1985). Student achievement and cocurricular activity participation. *NASSP Bulletin*, 69(483), 17-20.
- Hamann, K. (2010). Music at Lincoln Junior High (Minneapolis) and the Lincoln Junior High Girls' Band: 1923-1940. *Journal of Research in Music Education*, 58(1), 55-74.

- Hamm, W. H., & Clawson, K. (1992). The effect of grouping on the behaviors of eighth grade students.
- Holland, A., & Thomas, A. (1987). Participation in extracurricular activities in secondary school: What Is known, what needs to be known? *Review of Educational Research*, 57(4), 437-66.
- IBM SPSS Statistics (Version 20) [Computer software]. Greenville, NC: East Carolina University. Available from <http://www.ecu.edu/cs-itcs/Software/statistical.cfm>
- Kurt, J. T. (2010, January 1). Factors affecting literacy achievement of eighth grade middle school instrumental music students. ProQuest LLC.
- Leenman, T. (2010). The real “crisis” in this budget crisis. *School Band & Orchestra*, 13(7), 30-32. Retrieved from EBSCOhost.
- Leonard, E., & Box, J. L. (2009). The relationship between Mississippi accreditation ranking and socio-economic status of student populations in accredited schools. Online Submission.
- Lessard, A., Butler-Kisber, L., Fortin, L., Marcotte, D., & Potvin, P., & Royer, E. (2008). Shades of disengagement: High school dropouts speak out. *Social Psychology of Education*, 11(1), 25-42.
- Martin, E. J., Tobin, T. J., & Sugai, G. M. (2002). Current information on dropout prevention: Ideas from the practitioners and the literature. Retrieved from <http://web.ebscohost.com.jproxy.lib.ecu.edu/ehost/detail?vid=5&hid=14&sid=9d8fd12f-4fc0-4229-8349>
- McCarthy, K. J. (2000). The effects of student activity participation, gender, ethnicity, and socio-economic level on high school student grade point averages and attendance.

- McLelland, M. J. (2005). The impact of instrumental music on student academic achievement. EdD dissertation, Wilmington College (Delaware), United States – Delaware.
- Retrieved from Dissertations & Theses: Full Text. (Publication No. AAT 3156552).
- McNeal, Jr., R. (1995). Extracurricular activities and high school dropouts. *Sociology of Education*, 68(1), 62-80.
- Morgan, D. L., & Alwin, D. F. (1980). When less is more: School size and student social participation. *Social Psychology Quarterly*, 43(2), 241-252.
- Morrison, S. J. (1994). Music students and academic growth. *Music Educators Journal*, 81(2), 33-36.
- Olson, C. (2009). Music and academic success go together at Whitworth; University's survey results also suggest high school music may boost chances of college admittance. *Teaching Music*, 16(6), 20.
- Overton, G. P. (2001). A quantitative analysis of the educational performance of athletes and non-athletes of 131 high schools in North Carolina. EdD dissertation, East Carolina University, United States -- North Carolina. Retrieved from Dissertations & Theses @ East Carolina University. (Publication No. AAT 3027818).
- Pallant, J. (2010). *Spss survival manual*. (4th ed.). New York: The McGraw-Hill Companies.
- Perry, J. A. (2011). The Carnegie project on the education doctorate: Phase ii-a quest for change. *UCEA Review*, 52(3), 1-4. Retrieved from www.ucea.org
- Parsons, R. W. (2009, January 1). Arts Educators' Perceptions regarding decreased administrative support for public school arts education: A phenomenological study. ProQuest LLC.

- Phillips, V., & Wong, C. (2010). Tying together the common core of standards, instruction, and assessments. *Phi Delta Kappa*, 91(5), 37-42.
- Ream, R. K., & Rumberger, R. W. (2008). Student engagement, peer social capital, and school dropout, among Mexican American and Non-Latino White students. *Sociology of Education*, 81(2), 109-139.
- Schneider, T. W., & Klotz, J. (2000). The impact of music education and athletic participation on academic achievement. ERIC, EBSCOhost.
- Sheskin, D. J. (2004). *Handbook of parametric and nonparametric statistical procedures* (3rd ed.). Boca Raton, FL: Chapman & Hall.
- Shulman, L. S., Golde, C. M., Bueschel, A. C., & Gorabedian, K. J. (2006). Reclaiming: education's doctorate: A critique and a proposal. *Educational Researcher*, 35(2), 25-32.
- Stegman, M., & Stephens, L. J. (2000). Athletics and academics: Are they compatible?. *High School Magazine*, 7(6), 36-39.
- Sun, J., & Metros, S. E. (2011). The digital divide and its impact on academic performance. Online Submission.
- Terzian, S. G. (2004). The elusive goal of school spirit in the comprehensive high school: A case history, 1916-1941. *High School Journal*, 88(1), 42-52.
- Terzian, S. G. (2005). The struggle for the American extra curriculum at Ithaca High School, 1890-1917. *Journal of Curriculum and Supervision*, 20(4), 319-341.
- Vitucci, M. E. (2010). The effects of participation in marching band on academic achievement. Ed.D. dissertation, Trevecca Nazarene University, United States – Tennessee. Retrieved from Dissertations and Theses: Full Text. (Publication no. AAT 3413076).

- Walker, K., & Education Partnerships, I. (2006). Fine Arts Education. Research Brief. *Education Partnerships, Inc.*
- Watkins, A. B. (2004). The effects of participation in extracurricular activities on the mean grade point average of high school students in a rural setting. EdD dissertation, The University of Tennessee, United States – Tennessee. Retrieved from Dissertations & Theses: Full Text. (Publication No. AAT 3148314).
- Wergin, J. F. (2011). Rebooting the EdD. *Harvard Educational Review*, 81(1), 119-140.
- Whitley, R. L. (1995). A comparison of the educational performances of athletes and nonathletes in 133 North Carolina high schools. EdD dissertation, East Carolina University, United States -- North Carolina. Retrieved from Dissertations & Theses @ East Carolina University. (Publication No. AAT 9604543).
- Yoon, J. (2000, January 1). Music in the classroom: Its influence on children's brain development, academic performance, and practical life skills.
- Youniss, J. (2011). Civic education: What schools can do to encourage civic identity and action. *Applied Developmental Science*, 15(2), 98-103.
- Zambo, D. (2011). Action Research as Signature Pedagogy in an Education Doctorate Program: The Reality and Hope. *Innovative Higher Education*, 36(4), 261-271.

APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL



EAST CAROLINA UNIVERSITY

University & Medical Center Institutional Review Board Office

4N-70 Brody Medical Sciences Building · Mail Stop 682

600 Moye Boulevard · Greenville, NC 27834

Office **252-744-2914** · Fax **252-744-2284** · www.ecu.edu/irb

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Jeffrey Murphy
CC: Kermit Buckner
Date: 5/2/2013
Re: UMCIRB 13-000760
The Craven County High School Study

I am pleased to inform you that your research submission has been certified as exempt on 5/2/2013. This study is eligible for Exempt Certification under category #1.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification request at least 30 days before the end of the five year period. The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418

IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

APPENDIX B: PROBLEM OF PRACTICE



Craven County Board Of Education

Lane B. Mills
Superintendent

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July 10, 2012

Dr. Kermit Buckner
East Carolina University

Dear Dr. Buckner,

Craven County Schools will implement the Common Core standards and the North Carolina Essential standards during the upcoming 2012-2013 school year. When making priority decisions about curricula, courses, and programs it becomes necessary for educators to peruse available research to determine the educational and developmental impact of each program. It is also useful to conduct new research during times of change.

Accountability expectations that have evolved over the last two decades have caused many school principals to favor courses that are tested by the state and to develop transitional or preparatory courses that support the tested courses. A decreasing emphasis on enrollment in the arts and specifically band programs has resulted.

For many years, educators in Craven County have noted the benefits for students provided by participation in extracurricular and co-curricular programs. There is a preponderance of research that demonstrates the value of participation in athletics; however, the availability of research regarding participation in the Arts is limited. In Craven County, band programs have existed and thrived for decades and these programs have enjoyed support from the school system and the community. The goal of our school system is to educate the whole child while preparing students for life in the 21st Century. Due to accountability mandates and other external pressures, the importance of instruction in the Arts may often be overlooked.

In order to better prepare the high school principals in Craven County to make decisions about band participation, I have asked Jeffrey Murphy, the Havelock High School principal to complete a comparative analysis of the educational performance of Craven County high school band participants and non-participants. This problem of practice for our district will consist of a focus on the three Craven County traditional high schools including Havelock High School, New Bern High School and West Craven High School. All three principals have agreed to provide the necessary information

This study will compare the educational performance of band participants and non-band participants during the 2011-2012 school year. The analysis will focus upon grade point average, the number of out-of-school suspensions, period attendance, Algebra 1 End-of-Course scores, English 1 End-of Course scores, Biology End-of-Course scores and the dropout rate.

It is hoped that this research will provide Craven County principals and others with empirical data that will facilitate decision making in regard to providing a course of study in the future that will be prepare the whole child for life after high school. Thank you.

Sincerely,

A handwritten signature in black ink, appearing to read "Lane B. Mills".

Lane B. Mills
Superintendent